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DEVOTED TO TEXTILE WET-PROCESSING

AATCC CONVENTION ISSUE

contents

VOLUME 48 **SEPTEMBER 21, 1959** **NUMBER 19**

special articles

An Investigation of Inorganic Salts and Oxides as Finishes for Cotton 139
Ramon M Esteve Jr, Georgia Ellen Wright, and Pauline Beery Mack

aatcc proceedings

1959 National Convention:—
President's Invitation to the 1959 AATCC Convention ... 81
Greetings from the Vice Presidents ... 82
Greetings from the Southern Region's Sectional Chairmen ... 83
Greetings from the Convention Chairmen ... 84
Ladies Program ... 84
Technical Program; General Program ... 85
Organization of the AATCC ... 86
Founder, Honorary Members ... 87
Past Presidents ... 88
Senior Staff at National Headquarters ... 89
Chairmen—Standing Committees of the Council ... 90
Executive Committee—1959 National Convention ... 91
Personnel Service at Convention ... 92
The Sections of the Southern Region ... 93
A R Thompson, A Kempton Haynes and Robert T Graham
9th American Dyestuff Reporter Award ... 97
A History of Textile Education in the Southern Region ... 98
Cleveland L Adams, James L Taylor, Gaston Gage, and Henry A Rutherford
1959 AATCC Dyeing and Finishing Exhibit ... 105
Emery I Valko—16th Olney Medalist ... 109
Abstracts of Technical Papers to be Presented at Washington ... 114
1959 Intersectional Contest ... 119
Visits to Local Laboratories ... 125
Chapin to Receive First Service Award ... 125
Top-flight Entertainment Scheduled for Annual Banquet ... 125
Membership Applications ... 126
Elected Members ... 126
AATCC Calendar ... 126
AATCC Research:—
Abrasion Resistance of Fabrics: Evaluation of Wear by Means of the Accelerotor ... 127
AATCC Committee on Resistance to Abrasion
Analysis of Finish in Textiles ... 129
AATCC Committee on Identification of Finishes on Textiles
Dimensional Restorability of Woven Textiles after Laundering ... 133
AATCC Committee on Dimensional Change in Textile Fabrics
ISIS Review of Book of Proceedings of the Perkin Centennial ... 135
Employment Register ... 135
Future Papers ... 135

departments

Inter Alia—Inter Nos ... 145
P J Wood
General Calendar ... 142
Abstracts ... 153, 176
News of the Trade ... 159
New Products and Developments ... 166
Names in the News ... 168

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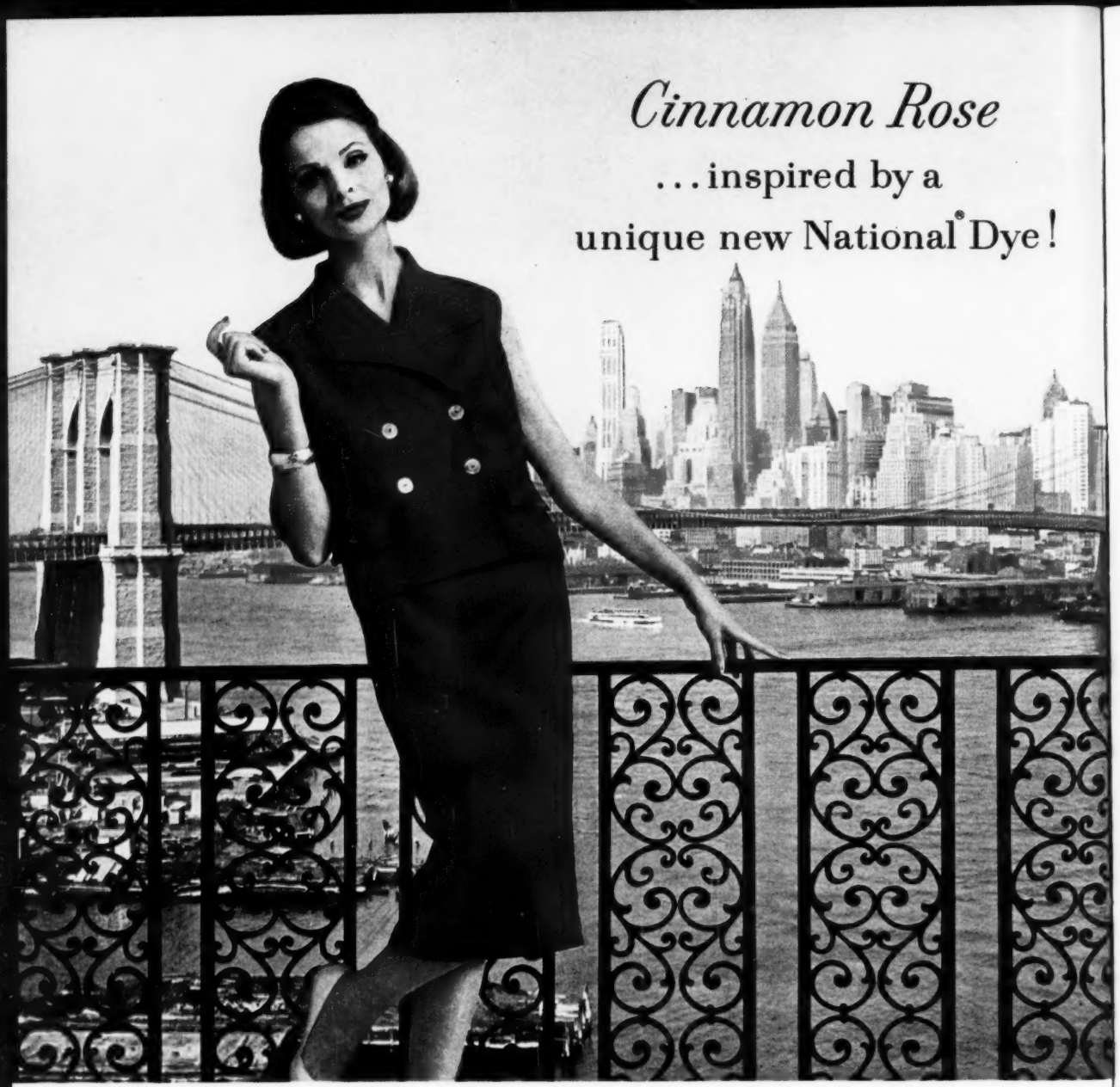
Contents of previous issues can be found by consulting the Service and Technology Index and the Engineering Index, Inc, at your library



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Proceedings of the

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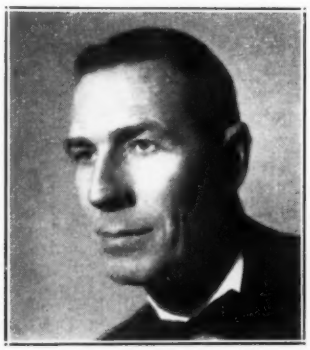
September 21, 1959 No. 19

Thirty-Eighth National Convention

Auspices of the Southern Region. Hotels Park Sheraton and Shoreham, Washington, DC

October 7-10, 1959

PRESIDENT'S INVITATION TO THE 1959 AATCC CONVENTION



WELDON G HELMUS
President

ON October 8-10, the largest convention in AATCC history will convene in the nation's capital, sponsored by the Washington, Piedmont, South Central and Southeastern Sections of the Southern Region. The 1959 Convention promises not only Southern hospitality at its best, but also an outstanding technical program and unique entertainment features.

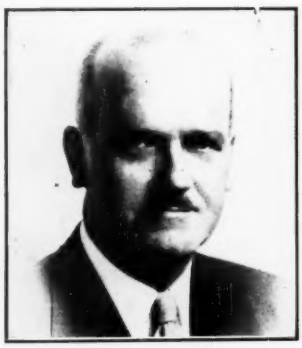
This will be an occasion for AATCC members to bring their families with them. The many historical sites and points of interest offered by Washington are unmatched anywhere in the United States.

I hope each and every member of AATCC will consider this a personal invitation to attend the Convention and take advantage of the opportunity to renew old friendships and make new ones, to obtain valuable first-hand technical information, and to participate in this great annual event which will highlight 1959.

Weldon G Helmus
President, AATCC

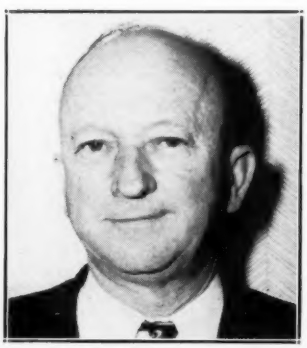
Greetings

FROM THE VICE PRESIDENTS



W GEORGE PARKS
Vice President
New England Region

C T ANDERSON
Vice President
Central Atlantic Region



H GILLESPIE SMITH
Vice President
Southern Region

ELLIOTT MORRILL
Vice President
Western Region

NEW ENGLAND REGION

THE Annual Convention this year in Washington, DC, will be an outstanding event in the history of the AATCC. I strongly urge you to make every effort to attend and participate in this Convention. The Committee has accepted its responsibility and prepared an excellent program for both men and women. The technical program alone will convince you of the importance of the meetings. In addition there are many interesting museums, art galleries and important public buildings in the capital of our country. Every public-spirited citizen should visit Washington, DC, not only to attend the Convention but also to enjoy a beautiful city.

I wish to extend greetings from the New England Region to all members of the AATCC. When Samuel Slater in 1790 established the first cotton textile mill, he identified the New England Region with the textile industry. Over the years the Region has developed a sincere respect for and friendly attitude toward the industry. In this spirit we are anticipating with much pleasure meeting you in Washington, DC.

W GEORGE PARKS
Vice President (New England Region)

CENTRAL ATLANTIC REGION

ONE of the most beautiful cities in the world offers to the members and guests of the AATCC the exciting experience of visiting our nation's capital and enjoying its unsurpassed beauty together with the opportunity of visiting our national shrines.

In addition to the many interesting highlights that are peculiar of Washington, DC, your Convention Committee has organized a technical program, which is designed to stimulate the interests of the cross-section of our membership. This, combined with a well-planned ladies' program, should make our Washington Convention of interest to all.

The Central Atlantic Region (Niagara Frontier, Hudson-Mohawk, Metropolitan, and Delaware Valley Sections) has always displayed remarkable enthusiasm towards attending our conventions and I feel confident that Washington can expect a fine turn-out from our Region in October.

C T ANDERSON
Vice President (Central Atlantic Region)

SOUTHERN REGION

AS vice president representing the Southern Region, I am especially glad to welcome you to the 1959 Convention to be held in Washington, the youngest Section of our Region.

We are all aware of the increasing movement to the South of things textile, along with its bureaus, councils and research organizations, especially in the Washington area. At this convention you will see first hand why this is so, in our own program, as well as in the activities of other organizations similar to our own.

Your Program Committee has prepared an outstanding schedule for you with technical papers on "wash-and-wear" and the latest processes in dyeing and finishing with natural and man-made fibers. Commercial exhibits again, after an absence of two years, will be of increased interest to all.

The many attractions of the capital of our country are universally known and you will easily see why Washington continues to be the number one choice of all tourists.

You can be assured of an informative and enjoyable time at your 1959 Convention. Welcome South, Brother! And bring the Missus.

H GILLESPIE SMITH
Vice President (Southern Region)

WESTERN REGION

THE Western Region extends greetings to members of AATCC, their ladies, and friends attending the 1959 Convention.

The membership of the Pacific Northwest, Pacific Southwest, and Mid-West Sections will attend the Washington Convention in substantial numbers, looking forward to making new friends and renewing old friendships.

As the most important capital of the world, Washington has much to offer all of us, and we join with all of our fellow members in wishing the members of the Convention Committee success in every part of their undertaking.

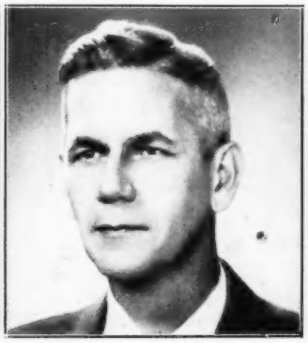
ELLIOTT MORRILL
Vice President (Western Region)

Greetings

FROM THE SOUTHERN REGION'S SECTIONAL CHAIRMEN

E V HELMS
Chairman
South Central Section

ROBERT B HALLOWELL
Chairman
Southeastern Section



JOSEPH C KING
Chairman
Piedmont Section

ARNOLD M SOOKNE
Chairman
Washington Section

SOUTH CENTRAL SECTION

THE South Central Section extends a most cordial welcome to you who are planning to attend the 38th National Convention. We look forward to the pleasure of sharing, with our fellow Sections of the Southern Region, this great opportunity to reciprocate the many courtesies extended to us by others of our admirable Association.

E V HELMS
Chairman, South Central Section

SOUTHEASTERN SECTION

WE of the Southeastern Section wish to extend you a sincere and hearty welcome to the 38th Annual National Convention. We are pleased to participate in sponsoring this convention, and we are looking forward to one of the most successful and enjoyable gatherings ever.

The technical program should be outstanding and will offer unequaled opportunity for gaining new ideas, stimulating our thinking, and contributing to the advancement and enrichment of our industry.

Our inspiring Capital will form an impressive setting, and the activities planned will provide a congenial atmosphere and a good time for all—so we hope to see you all there.

ROBERT B HALLOWELL
Chairman, Southeastern Section

PIEDMONT SECTION

IN behalf of the Piedmont Section, I would like to extend our greetings and invite you to attend the 38th National Convention to be held in our National Capital, Washington, DC, on October 7, 8, 9, 10.

It is fitting that, by our heavy attendance, we pay tribute to the efforts of Chairman Leonard Smith and his staff, which is working diligently to see that the 38th Convention will be long remembered as one of the best. While all Southern Sections are cooperating, we especially commend the Washington Section for its unstinting support in performance of the many tasks necessary to the successful operation of the meeting.

The high caliber of the technical discussions and the exhibits, along with the innumerable historical landmarks should attract all of us to Washington. We look forward to seeing each of you there.

JOSEPH C KING
Chairman, Piedmont Section

WASHINGTON SECTION

IT is a real pleasure to send greetings to the members of the AATCC, their wives and guests, and to welcome all of you to the first National Convention to be held in our city. We have planned an excellent program of technical symposia and entertainment, and promise you a pleasant and stimulating meeting in an attractive environment.

Washington is not only our capital city in the political sense; it is in many ways the research capital of our country and perhaps of the world. It is the repository of our national heritage, in the form of buildings, documents and places where history was made and is being made today. And it is a beautiful city, one that all Americans should see.

Welcome to the Convention; we hope to greet you personally on October 7-10.

ARNOLD M SOOKNE
Chairman, Washington Section

Greetings FROM THE CONVENTION CHAIRMEN

LEONARD SMITH
Convention Chairman

NELSON F GETCHELL
Deputy Chairman

To the Membership:

Welcome to the first National AATCC Convention to be held in the Nation's Capital!

On behalf of the Southern Region, it is the Chairman's and the Deputy Chairman's pleasure and privilege to extend a most cordial invitation to the entire AATCC membership and to their guests to visit Washington on the occasion of the 38th National Convention. This year's annual meeting is certain to go down as a milestone in the Association's history. It will be a truly NATIONAL Convention, with international overtones.

The 1959 Convention is expected to set a record for both national and international attendance. Representatives from almost every textile-producing country in the world will be present. Reports from the local sections indicate that Washington will attract an all-time record attendance of Association members and their families. Those attending this year's meeting will have a chance of meeting more old friends and of making more new acquaintances than at any previous Convention. October is a popular tourist season in Washington, so everyone is urged to make reservations early.

The Convention Committee is doing its utmost to make this year's meeting an outstanding event. A highlight of the Convention will be the exhibits of latest developments in dyes, textile chemicals, tools and processing equipment. These will provide a nucleus for new ideas and a stimulus for discussion of technical problems and opportunities. From a technical program standpoint, success is already assured by the agenda of leading speakers who will present subjects of high technical interest and value to every AATCC member. The Intersectional Contest will provide the usual "seasoning" to the technical program.

The Annual Banquet is scheduled for Friday evening, and Saturday has been set aside as a day of recreation, entertainment and sightseeing. For those who have never visited Washington, tours of famous landmarks and public shrines will be available. Those who have previously seen the more popular sights may prefer the endless variety of museums and art galleries that the average tourist seldom has time to appreciate. For wives and families, special programs and sightseeing tours of historic interest have been arranged by the Ladies Committee. The athletically inclined have been provided with a golf tournament and a choice of football games.

Your Southern Region hosts have planned a program providing the utmost in fellowship, technical information and pleasant memories, and we look forward to greeting you at the 1959 Convention.

LEONARD SMITH
Chairman

NELSON F GETCHELL
Deputy Chairman

LADIES PROGRAM

Thursday, October 8

Hospitality Room, Park Sheraton Hotel, open 8 AM to 4:30 PM.

Conducted tour of the City of Washington, DC, 10:00 AM to 1:00 PM.

Free time for lunch, shopping, sightseeing, or visiting in the Hospitality Room.

Friday, October 9

Hospitality Room, Park Sheraton Hotel, open 8 AM to 4:30 PM.

Visit to the White House, 9:30 AM to 10:15 AM.

Get-acquainted Luncheon and Fashion Show, Shoreham Hotel, 12:30 PM to 2:30 PM.

Free time for shopping, sightseeing, or visiting in the Hospitality Room.

Hostessess will be present on both Thursday and Friday in the Hospitality Room to assist the visiting ladies. Information concerning tours and other tourist attractions also will be available in the Hospitality Room.

TECHNICAL PROGRAM

(See abstracts of papers on pages 114-118)

Thursday, October 8, 1959

9:15 AM—12:15 PM—SYMPOSIUM I—"WASH AND WEAR"

Chairman: Paul B Stam, J P Stevens & Co, Inc.

"The Consumer's Point of View"—Genevieve M Smith, Sears, Roebuck and Co

"Man-made Fibers for Wash and Wear"—James R Bercaw, Textile Research Laboratory, E I duPont de Nemours & Co, Inc

"Progress in Wash and Wear Wool"—John F Krasny and John Menkart, Harris Research Laboratories, Inc

"Man-made Cellulosic Fibers in Wash and Wear"—A B Hilton, G V Lund and A E Martin Jr, Courtaulds (Alabama) Inc

"Retrospect and Prospect: Progress and Problems in Wash and Wear"—Pauline Berry Mack, Texas Woman's Univ

2:15 PM—4:30 PM—SYMPOSIUM II—"DYEING AND FINISHING OF BLENDS"

Chairman: James E Greer, Dyeing and Finishing Div, Burlington Mills Corp

"Recent Developments in Finishing"—Henry H Latham, Arkansas Co

"Recent Problems in the Dyeing and Finishing of Dacron Blends"—Paul L Meunier, E I duPont de Nemours & Co, Inc

"Techniques for Union Dyeing Blends of Zefran and Cotton with Vat Dyes"—R L Burgess, Textile Development Dept, Dow Chemical Co

"Dyeing and Finishing of Special Blends of Arnel with Acrylics or Cotton in Circular Knit Applications"—Ralph E Lacy and Jack A Dayvault, Celanese Corp of America

Friday, October 9, 1959

9:15 AM—12:15 PM—SYMPOSIUM III—"NEW DYEING AND FINISHNG PROCESSES"

Chairman: Fred Fortess, Celanese Corp of America

"Recent Advances in the Pressure Beam Dyeing of Synthetic Fabrics"—Walter J Newcomb, Gaston County Dyeing Machine Co, and George C Ward, Dyeing and Finishing Laboratories, Celanese Corp of America

"Twelve Million Yards of Natural and Man-made Fibers Dyed on the Swedish Pad-Roll Dyeing Machine"—Robert M Lesh, Northern Dyeing Corp

"Present-day Trends in Bleaching"—Bernard K Easton, Inorganic Research and Development Dept, Food Machinery and Chemical Corp

"The Monforts Reactor—A New Continuous Dyeing Machine"—Joachim Roehl, A Monforts Maschinenfabrik, M Gladbach, Germany

"Dyeing Blends of Dacron Polyester Fiber and Cotton by the Thermosol Process"—Joseph J Iannarone Jr and William Wygand Jr, E I duPont de Nemours & Co, Inc

2:00—4:30 PM—INTERSECTIONAL CONTEST

Chairman: Thomas J Gillick Jr, American Felt Co

(See pages 119-124 for details of the Intersectional Context)

GENERAL PROGRAM

Wednesday, October 7th
Registration—12 noon to 9 PM
Exhibits—4 to 9 PM

Thursday, October 8th
Registration—8 AM to 6 PM
Technical Sessions—9:15 AM and 2:15 PM
Awards Luncheon—12:15 PM
Exhibits—10 AM to 6 PM

Friday, October 9th
Registration—8:30 AM to 6 PM
Technical Session—9:15 AM
Intersectional Contest—2:00 PM
Banquet—7:30 PM
Exhibits—10 AM to 6 PM

Saturday, October 10th
Golf Tournament—University of Maryland—All Day
Football Game—University of Maryland vs Wake Forest—1:30 PM

AWARDS LUNCHEON

Departing from past procedure, the Awards Luncheon at 12:15, Thursday, October 8 will introduce recipients of three honors—the traditional Olney Medal, the Harold C Chapin Award and the American Dyestuff Reporter Award. Introducing all three recipients will be Weldon G Helmus, Fair Lawn Finishing Co and AATCC President.

BANQUET

The Annual Banquet will be held Friday, October 9, at 7:30 pm. Highlights will be the "State of the Union" message by President Helmus, announcement of Intersectional Contest Winners, and a program of top-flight professional entertainment (see page 125).

ENTERTAINMENT

GOLF TOURNAMENT, SATURDAY MORNING, OCTOBER 10TH—This tournament will be held at the University of Maryland's new 18-hole showpiece golf course. Prizes will be awarded using a handicap system to determine winners. The Golf Committee will have a representative at the reception desk to arrange foursomes and to assign starting times. Golfers who tee off after 12 noon will not be eligible for prizes. The course will be open, however, for those who do not desire to participate in the tournament. Those who plan to attend the football game in the afternoon should tee off before 8 AM if they are to make the football game on time.

FOOTBALL, SATURDAY, OCTOBER 10TH—The University of Maryland will play host to Wake Forest College. Game time is 1:30 PM. By special arrangement, a block of excellent seats between the 20-40 yard lines will be held for AATCC members. Tickets for this game are $4.00 each.

FOOTBALL, SUNDAY AFTERNOON, OCTOBER 11TH—Arrangements can be made for those planning to stay over on Sunday to attend the professional football game between the Washington Redskins and the Chicago Cardinals. Tickets are $4.50 each.

RECEPTION

An active Reception Committee with representatives from ten Sections will extend a hearty greeting and welcome to all members and guests at the Convention.

The Reception Committee, wearing RED BADGES, will be on hand at the Reception and throughout the Convention to answer your questions and make your attendance more pleasant.

ORGANIZATION OF THE AATCC

FOUNDER

LOUIS A OLNEY
(deceased)

COUNCIL OF THE ASSOCIATION

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Committee on Individual Membership	H A STAUDERMAN
Study Committee on Location of National Headquarters	SYDNEY M CONE JR

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Central Atlantic Region

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Southern Region

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SOUTH CENTRAL ..... *Chairman*: ERNEST V HELMS, Geigy Dyestuffs, 1208 E 23rd St, Chattanooga 4, Tenn; *Secretary*: ROBERT N INGRAM, Lebanon Woolen Mills, Lebanon, Tenn; *Vice Chairman*: EDWIN F JURCZAK; *Treasurer*: RICHARD J TYRRELL

SOUTHEASTERN ..... *Chairman*: ROBERT B HALLOWELL, Coats & Clark, Inc, Old Cordele Rd, Albany, Ga; *Secretary*: WARREN E TILLER, Tennessee Corp, 617-29 Grant Bldg, Atlanta 1, Ga; *Vice Chairman*: WILLIAM B AMOS; *Treasurer*: LEON TIGLER

WASHINGTON ..... *Chairman*: ARNOLD M SOOKNE Harris Research Labs, 6220 Kansas Ave, NE, Washington, DC; *Secretary*: ROBERT T GRAHAM, National Institute of Drycleaning, Inc, 909 Burlington Ave, Silver Spring, Md; *Vice Chairman*: NELSON F GETCHELL; *Treasurer*: LOUIS R MIZELL

Western Region

MID-WEST ..... *Chairman*: JACK G KELLEY, E I duPont de Nemours & Co, Inc, 7 S Dearborn St, Chicago 3, Ill; *Secretary*: WALTER H SITES, Ciba Company, Inc, Box 216 Skokie, Ill; *Vice Chairman*: JAMES L McGOWAN; *Treasurer*: FRANK H GURRY

PACIFIC NORTHWEST ..... *Chairman*: JACK D GILBERG, General Chemical Div, Allied Chemical Corp, Box 369, Vancouver, Wash; *Secretary*: DANNY GAYMAN, Ciba Co, Inc, 1238 NW Glisan St, Portland, Ore; *Vice Chairman*: PAUL J PERNICE; *Treasurer*: DALE W KIMSEY

PACIFIC SOUTHWEST ..... *Chairman*: PAUL F NOONAN, Dyemasters, Inc, 1511 W Florence, Inglewood, Calif; *Secretary*: THOMAS P LEE, Geigy Chemical Corp, 3529 E Olympic Blvd, Los Angeles 22, Calif; *Vice Chairman*: WALTER E KRAMER; *Treasurer*: THEODORE B SMOCK JR

STUDENT CHAPTERS

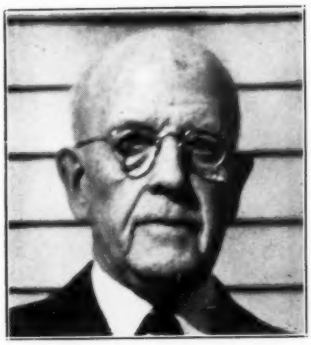
Alabama Polytechnic Institute, Bradford Durfee College of Technology, Clemson College, Georgia Institute of Technology, Lowell Technological Institute, New Bedford Institute of Technology, North Carolina State College, Philadelphia Textile Institute, Rhode Island School of Design

FOUNDER

LOUIS A OLNEY
Founder and Past President
1922-1927
(deceased)

HONORARY MEMBERS

WILLIAM R MOORHOUSE
Treasurer Emeritus
Honorary Member



WILLIAM H CADY
Past President (1936-37)
Honorary Member

ALBERT E SAMPSON
Past Treasurer
Honorary Member

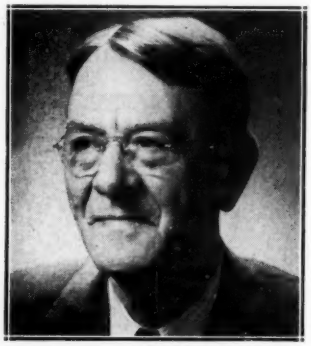
HAROLD C CHAPIN
Past Secretary
Honorary Member

PAST PRESIDENTS

(An asterisk follows the names of the deceased)

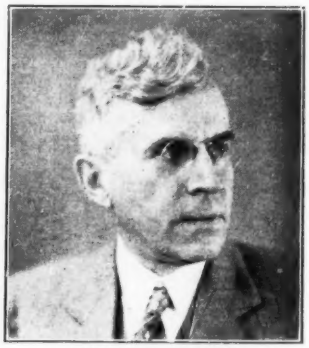
LOUIS A OLNEY*
1922-1927

ELVIN H KILLHEFFER
1928-1930



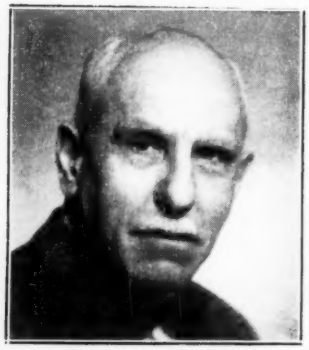
P J WOOD
1931-1932

WILLIAM H CADY
1936-1937



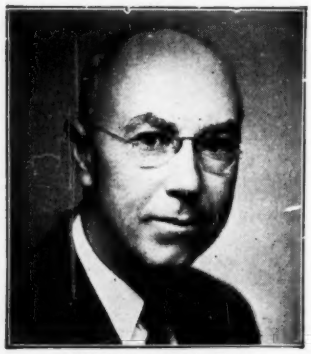
ROBERT E ROSE*
1933-1935

ALBAN EAVENSON*
1938-1939



CARL Z DRAVES
1940-1941

THOMAS R SMITH
1942-1943



WILLIAM D APPEL
1944-1946

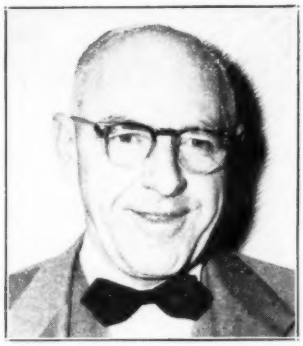
HENRY F HERRMANN
1947-1949

C NORRIS RABOLD
1950-1952

J ROBERT BONNAR
1953-1954

RAYMOND W JACOBY
1955-1956

GEORGE O LINBERG
1957-1958



ARTHUR R THOMPSON

(Mr Thompson was appointed Treasurer by the Council on September 11, 1959)

SENIOR STAFF AT NATIONAL HEADQUARTERS

GEORGE P PAINE
Executive Secretary

HAROLD W STIEGLER
Director of Research

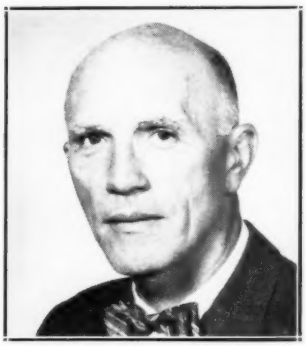
GEORGE J MANDIKOS
Technical Manager
Research Associate

G ROBERT THOMPSON
Staff Editor
Research Associate

GLEN M KIDDER
Research Associate

CHAIRMEN—STANDING COMMITTEES OF THE COUNCIL

CHARLES W DORN
Chairman
Executive Committee on Research



CHARLES A SYLVESTER
Chairman
Technical Committee on Research

EDWARD ARTIM
Chairman, Publicity

ROLAND E DERBY
Chairman, Appropriations

PAUL J LUCK
Chairman, Publications

ALBERT E JOHNSON
Chairman, Corporate Membership

WILLIAM A HOLST
Chairman, Constitution & Bylaws

ERNEST R KASWELL
Chairman, Conventions

SIDNEY M EDELSTEIN
Chairman, Archives

HENRY A RUTHERFORD
Chairman, Textile Education

MATTHEW J BABEY
Chairman
Subject & Speakers' Bureau

EXECUTIVE COMMITTEE—1959 NATIONAL CONVENTION

Chairman

LEONARD SMITH

Deputy Chairman

NELSON F GETCHELL

Assistant Chairmen

JOSEPH C KING

ROBERT B HALLOWELL

ERNEST V HELMS

Dining

ANTHONY M SCHWARTZ, chairman

Finance

LOUIS R MIZELL, chairman

Entertainment

JOHN W HOWARD, chairman

Exhibits

GEORGE P FULTON, chairman

Hotel

JOSEPH R WIEBUSH, chairman

Ladies

ESTHER L BATCHELDER, chairman

Elinor Davis
Florence Forziati
Ruth Howorth
Alice Linn
Dorothy Lyle
Faye Mitchell
Marjorie Molloy
Dorothy Nickerson
Mrs William D Appel, W
Mrs Edmund M Buras Jr, W
Mrs Robert T Graham, W
Mrs Arnold M Sookne, W
Mrs Lyman E Fourt, W
Mrs Louis R Mizell, W
Mrs J R Wiebush, W
Mrs Thomas H Hart, DV
Mrs Frederick V Traut, DV
Mrs Joseph H Jones, MW
Mrs William H Leyking, NF
Mrs Kenneth A Lister, NF
Mrs Warren E Rixon, P
Mrs Joseph C King, P
Mrs Richard E Rettew, P
Mrs W G Parks, RI
Mrs Edwin F Jurczak, SC
Mrs Robert B Hallowell, S

Printing

JOHN C COOK, chairman

Publicity

ARTHUR R THOMPSON, chairman

Reception

RALPH L CARR, chairman
Thomas H Hart, DV
Frederick V Traut, DV
Harvey Gendreau, HM
Allan J Rooney, HM
Mrs Geo O Linberg, NNE
Edward B Bell, NNE
William H Leyking, NF
E P Lavoie, P
Richard E Rettew, P
Francis H Casey, RI
R B Taylorson, RI
E R Ravenel, S
William O Neeb, SC
William Quigg, SC
A H Rant, WNE
P W Reeves, WNE
J F Synan, W,
assistant chairman

Registration

ROBERT T GRAHAM, chairman

Technical Program

ARNOLD M SOOKNE, chairman

Tours

EDWARD C OLIVA, chairman

Transportation

GEORGE LOURIGAN, chairman

ANTHONY M SCHWARTZ
Chairman
Dining Committee

JOSEPH R WIEBUSH
Chairman
Hotel Committee

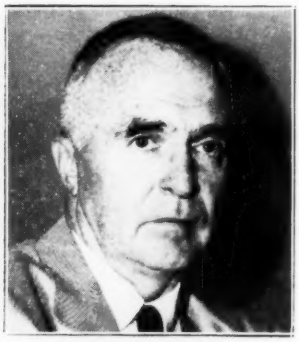
RALPH L CARR
Chairman
Reception Committee

LOUIS R MIZELL
Chairman
Finance Committee

ESTHER L BATCHELDER
Chairman
Ladies Program

ROBERT T GRAHAM
Chairman
Registration Committee

JOHN W HOWARD
Chairman
Entertainment Committee



JOHN C COOK
Chairman
Printing Committee

EDWARD C OLIVA
Chairman
Tours Committee

GEORGE P FULTON
Chairman
Exhibits Committee

GEORGE H LOURIGAN
Chairman
Transportation Committee

PERSONNEL SERVICE AT CONVENTION

The Personnel Service will operate to introduce members to prospective employers, without charge, from Thursday morning, October 8, until Friday afternoon, October 9. Rooms will be assigned for this service at the Park Sheraton Hotel and notice will be posted on Hotel Bulletin Board. Members seeking employment should, if possible, register before the Convention, but members, as well as employers, may register at the Convention.

Every person expecting to use this service in seeking employment is requested to write in advance to Mrs E R Goodale, Employment Service, AATCC, Box 28, Lowell, Mass for two blanks on which to state his qualifications and desires. For attachment to these, two photographs measuring about 2 x 2½ inches are desirable.

Employers registering with the Service at the Convention will be permitted to consult these records, and will be assisted in arranging interviews between 9:00 AM and 5:00 PM on Thursday; between 9:00 AM and 5:00 PM on Friday. Representatives of educational institutions also are invited to register for the purpose of answering inquiries about their students.

Your Hosts———

THE SECTIONS OF THE SOUTHERN REGION

Piedmont Section

ARTHUR R THOMPSON

THE Piedmont Section, AATCC, oldest of the four Southern Sections, is happy to serve as one of the host sections for the 1959 National Exhibition and Convention to be held in Washington, DC, October 7, 8, 9, 10, 1959.

The Piedmont Section was organized in Greenville, SC, in a Cafeteria of the Imperial Hotel, on Saturday, October 23, 1924 with forty-nine members present. E H Killheffer, Newport Chemical Works, was authorized by the Council to organize the first Southern Section, a split-off from the Philadelphia Section, which heretofore, covered the Philadelphia area and all Southern states. The original name of the Piedmont Section was properly and significantly "The Southern Section of the AATCC" and included all territory south of Washington, DC, without any other boundary. The following were present at this inaugural meeting:

Brown Mahon	Leslie N Hood
John H Carey	Charles E Mullin
*Peter F O'Neill	A R Thompson
*J Baynard Smith	Charles H Stone
J Gordon Stott Jr	H J Siever
*A W Mungall	*Charles S Doggett
*Tom Taylor	George I Purvis
*R W Arrington	*John David Hunter
*T Gordon Mungall	B S Phetteplace
N R Vieira	Joe E Moore
Harry W Ormand	T Edgar White
M T Johnson	Paul Bolen
W D Shields	*Pat L Sullivan
*W M Hunt	*Richard Ackerstrom

*Deceased

The following officers were elected:

	Sectional Committee:
Chairman: Brown Mahon	N R Vieira
Vice Chairman: John H Carey	H L Siever
Treasurer: Peter F O'Neill	Charles H Stone
Secretary: Harry W Ormand	A W Mungall

Meetings were held approximately four times a year in different cities, which included Greenville, SC, Spartanburg, SC, Charlotte, NC, and Greensboro, NC, due to the distance which separated the members in the early years of the Southern Section. Some came from as far-off points as Chattanooga, Knoxville, Kingsport, and other cities in Tennessee, as well as from points in Georgia and Alabama. It was quite an outstanding event to attend the quarterly meeting of the Southern Section in those days, and represented quite a considerable outlay of time and money because the membership included many who had to travel all day or overnight to attend the meetings.

The Southern Section continued to grow in strength and numbers as well as courage. They invited the National Annual Meeting to convene for the first time in the South in Charlotte, NC, in December, 1926.

SOUTH CENTRAL SECTION FORMED FROM TERRITORY OF SOUTHERN SECTION———The Great distance which the Tennessee members had to travel to attend the meetings in the Carolinas, the increased interest in the affairs of the AATCC, and the desire to have a section of their own was largely responsible for the division of the Southern Section into two separate sections. Elvin H Killheffer, who was at that time vice president of the National Association, met with the group in Chattanooga to explain the objectives of the Association and to assist in forming the new section. This Section, which covered Tennessee, northern Georgia, and Alabama, was organized in Chattanooga, Tennessee on April 30, 1927 at the Hotel Patten. The name of the original Southern Section was then changed to the Piedmont Section.

SOUTHEASTERN SECTION FORMED FROM SOUTHERN AND SOUTH CENTRAL SECTIONS——— The South Central Section at the time of its formation had only 43 Senior Members and 6 Junior Members, but what it lacked in numbers was more than made up in enthusiasm. They showed a fifty percent increase in membership in the first four years, after which their growing pains resulted in the formation of a third section in the South, known as the Southeastern Section, which was formed June 20, 1931.

FORMATION OF THE FOURTH SOUTHERN SECTION IN THE WASHINGTON, DC AREA———The youngest of the AATCC Sections, the Washington Section, was organized on January 9, 1953.

The Washington Section drew its membership of about 130 from an area which includes the District of Columbia, Maryland, and that portion of Virginia north of Richmond. The Washington Section has relatively few textile manufacturing units but it includes prominent research facilities and its membership represent some outstanding private and government laboratories. Six technical meetings were held during its first year as a Section.

FRATERNITY OF THE SOUTHERN SECTIONS ———The four Southern Sections are truly a body of men banded together by common interests, and although they have their separate groups and officers, and meet in different parts of the South, there is a noticeable display of unity and pursuit of a common purpose to increase the knowledge of the application of dyes and chemicals in the textile industry. They have helped to encourage, in a practical way, research work on chemical processes and materials of import-

ance to the textile industries, and have established channels for the interchange of professional knowledge among their members. Thus, they have carried out the true objects of the American Association of Textile Chemists and Colorists.

The South has served as host for the national meetings in Charlotte, NC, December, 1926; Chattanooga, Tenn, December, 1930; Greensboro, NC, December, 1932; Chattanooga, Tenn, December, 1935; Atlanta, Ga, December, 1938; Pinehurst, NC, October, 1941; and again in Augusta, Ga, in October, 1948. In the 1948 Convention, three of the Southern Sections combined their efforts to entertain the National Association, but in the year 1954, all four Southern Sections pooled talents and resources to give a true Southern welcome in Atlanta, Ga. Those who attended this Convention may well remember the unusually hot Saturday afternoon football game in the Georgia Tech stadium where the greatest arousing and most unified cheer came at a point in the game when a few clouds passed over a sun-baked crowd of avid football enthusiasts and thus gave a brief respite from the scorching heat. Few attendants will remember who played or what the score was, but everyone in the Stadium will long remember that magnificent cloud in an otherwise clear, blue sky.

The following have served as past chairmen of the Piedmont Section:

Brown Mahon	Oct 1924-Jan 1925
Harold M Chase	Jan 1925-Oct 1925
L S Little	1925-6
*C S Doggett	1926-7
H A Barnes	1927-8
Charles E Mullin	1928-9
*R M Mitchell	1929-30
S L Hayes	1930-1
J L Crist	1931-2
A R Thompson	1932-3
George P Feindel	1933-4
*Paul F Haddock	1934-5
*Chester L Eddy	1935-6
T R Smith	1936-7
R E Rupp	1937-8
A Henry Gaede	1938-9
H E Kiefer	1939-40
Louis M Boyd	1940-1
T W Church Jr	1941-2
C Norris Rabold	1942-3
Henry B Dixon	1943-4
Sidney M Cone	1944-5
Leland G Atkins	1945-6
Wyss L Barker	1946-7
John B Neely	1947-8
P E Smith	1948-9
R H Smith	1949-50
Ed Briggs	1950-1
R H Souther	1951-2
M M McCann	1952-3
Henry A Rutherford	1953-4
H J Jordan	1954-5
Clarence Hooper	1955-6
C O Stevenson	1956-7
Warren E Rixon	1957-8

* Deceased

CHARLES H STONE SCHOLARSHIP FUND——The officers of the Piedmont Section, meeting in Charlotte on Saturday, October 16, 1954, chose to pay honor to one of the founders of the Southern Section, and established the Charles H Stone Scholarship Fund for aiding needy and worthy students pursuing a course in textile chemistry and dyeing at Clemson College, Clemson, SC, and North Carolina State College in Raleigh, NC. One student is maintained in each of these two schools each year from funds donated by members of the Piedmont Section. The fund is administered by a trusteeship appointed by the chairman of the Piedmont Section; each trustee serving three years. Ten worthy and capable students have been aided in completing a course in textile chemistry and dyeing during the past five years. The officers of the Piedmont Section in 1959 have authorized the establishment of a permanent fund to be known as the Charles H Stone Scholarship Fund, with a plan for using the income to aid worthy students in the pursuit of higher education in textile chemistry and dyeing.

MEETINGS——The Piedmont Section holds quarterly meetings, rather than monthly meetings, due to the considerable distance that some of the members have to travel. The Section's Annual Meeting is always held in Charlotte, NC, in the fall. Other meeting places are Greenville, SC; Greensboro, NC; Winston-Salem, NC; Roanoke, Va; Asheville, NC; Myrtle Beach, SC; Durham, NC, and Raleigh, NC.

HONORING PAST CHAIRMEN——The Piedmont Section instituted the plan of honoring its past chairmen by presenting them with suitable placques at the expiration of their terms of office. A further tribute to each past chairman is given in the form of a suitably engraved silver tray on the anniversary of the twenty-fifth year following his term of office. Ten such trays have been presented to past chairmen of the Section.

NATIONAL OFFICERS——The Piedmont Section has provided AATCC with two presidents: T R Smith and C Norris Rabold. Piedmont Section members who have served AATCC as vice presidents include Messrs Smith and Rabold, H A Barnes, A R Thompson, and S L Hayes. H Gillespie Smith is presently serving as vice president from the Southern Region.

MEMBERSHIP——The present membership of the Piedmont Section show:

Senior Members	982
Junior Members	38
Associate Members	121
Student Members	1
Corporate Members	38
Total Membership	1,180

The Piedmont Section joins wholeheartedly with the three other Southern Sections to welcome all members and guests to the 1959 National Convention of the AATCC meeting in Washington, DC, October 7-10, 1959.

South Central Section

THE first part of the history of the South Central Section is coincident with that of the Piedmont Section. On Saturday, October 23, 1924, at the Imperial Hotel in Greenville, South Carolina, there met a Southern group of chemists and colorists and others with related interests. Elvin H Killheffer, member of the National Council of the AATCC, was present, and this meeting was the beginning of the first section south of Philadelphia, Pennsylvania. It was officially designated the *Southern Section* of the AATCC and included all territories south of Washington, DC—without any other boundary.

The considerable distance that members from Tennessee, North Georgia and Alabama had to travel to attend meetings in the Carolinas, as well as a growing interest in the technical aspects of the textile industry, led to thoughts of a new section for these "westerly" groups. The division of the Southern Section soon followed, with the same Dr Killheffer, who was at that time vice president of the Association, meeting with a group in Chattanooga to help them get off to a good start. Peter F O'Neill, a charter member of AATCC and the first treasurer of the Southern Section, was delegated to promote the formation of a new section, and on April 30, 1927, the *South Central Section* was organized at the Hotel Patten in Chattanooga. Mr O'Neill served as temporary chairman, and was later elected chairman. Others of the first group of officers were John D Murray, vice chairman; J Baynard Smith, secretary; and Herbert A Rodgers, treasurer.

The South Central Section, at the time of its formation, had only 43 senior members and six junior members. There was a fifty percent increase in membership during the first four years, and the enthusiasm of the group was such as to enable the new section to act as host for the National Meeting and Convention of 1930. This was held in Chattanooga, December 4th and 5th, at the Read House. R S Wheeler of Crystal Springs Bleachery was chairman of the Section while Dr Killheffer (appropriately enough) was national president.

The formation of the Southeastern Section in 1931 reduced the membership of the South Central section to 26—less than the starting number. The Section recovered, however, and again acted as host for the National Meeting and Convention December 6 and 7, 1935. At this time Harold Schroeder of Dixie Mercerizing Co was chairman of the South Central Section and Robert E Rose, national president. Headquarters were again at the Read House; and, as in 1930, William J Kelly Jr of Burkart-Schier Chemical Company was general chairman.

Since that time, the growing attendance made it impossible for Chattanooga to accommodate the Annual Meeting of the national association. However, the South Central Section has joined with the other Sections of the Southern Region in sponsoring the 1948 Convention in Augusta and the 1954 Convention in Atlanta—and now that of 1959 in Washington.

Chairmen of the South Central Section since its inception have been:

P F O'Neill 1927-1928
L L Bamberger 1929
R S Wheeler 1930-1931
Noel D White 1932
Harold Schroeder 1933-1934-1935
Walter E Hadley 1936
Nestor Groteleuschen 1937-1938
Fletcher L Kibler 1939-1940
Jack Anderson 1941-1942
Homer Whelchel 1943
Frank F Myers 1944-1945
Clyde J Horne 1946
Jack Anderson 1947
Raymond B Seymour 1948
Wilbur K Newman 1949
Joseph H O'Neill 1950
William G Agnew 1951
Howard P Loveless 1952
Everett E Burgner 1953
Paul O Anderson 1954
Joe T Bohannon Jr 1955
W F Luther 1956
J C Whitt 1957
E V Helms 1958-1959

15th Annual Meeting & Convention—Read House, Chattanooga, Tenn—December, 1935

LOUIS A. OLNEY
President Emeritus and Chairman, Research Committee

H. C. CHAPIN
Secretary

WILLIAM H. CADY
Vice-President

CARL E. DRAVES
Chairman, Technical Program Committee

ANNUAL MEETING

CHATTANOOGA, TENN.

PROGRAM

FRIDAY, DECEMBER 6

10:00 A.M.—Registration Opens in Lobby of Read House.
1:30 P.M.—One hundred fourth Council Meeting.
2:00 P.M.—Sight-seeing trips—Cars furnished.
2:30 P.M.—Ninety-seventh Meeting of Research Committee.
3:00 P.M.—Bridge for Visiting Ladies.
6:30 P.M.—Buffet Supper in Ball Room of Read House.
7:45 P.M.—OFFICIAL OPENING OF CONVENTION.
7:50 P.M.—A Resume of the Properties and Uses of Ultraviolet Radiation—with demonstration
Joseph L. McEwen, National Aniline and Chemical Co.
9:20 P.M.—The Application of Optical Instruments in the Textile Industry for Routine and Research
H. H. Schrenk, Bausch & Lomb Optical Co.
9:00 P.M.—Eyes of Science—a motion picture
H. H. Schrenk, Bausch & Lomb Optical Co.
9:30 P.M.—Entertainment.
10:30 P.M.—Dancing.

SATURDAY, DECEMBER 7

9:30 A.M.—Accelerated Ageing Test for Weighted Silk
William D. Appel and Daniel Jessup, National Bureau of Standards.
9:55 A.M.—The Chemistry of Wool and its Relationship to Practical Processing
Milton Harris, A.A.T.C.C. Research Associate at the National Bureau of Standards.
10:30 A.M.—Cotton Printing: An Outline
Samuel J. Parker, Ciba Co.
11:00 A.M.—Some Recent Developments in the Application of Sulfur Dyestuffs
John L. Crist, Calco Chemical Co.
11:30 A.M.—A Review of Recent Analytical Methods with Special Applications to Textile Analysis
Irving W. Geiger, University of Chattanooga.
12:00 M.—BUSINESS MEETING.
Annual Reports of Officers and of Committee Chairmen: Election of Officers and Other Business.

RECESS FOR LUNCHEON

2:00 P.M.—Comparative Tests for Value of Sulfur Trioxide in Different Amounts in Sulfonated Oil
Albert H. Grimshaw, North Carolina State College.
2:25 P.M.—Conditioning Water for the Textile Industry
H. H. Morrison, Permutit Co.
2:55 P.M.—The Influence of the Finishing Operations on the Light Fastness of Vat Dyeings
Louis Schaefer, E. I. du Pont de Nemours & Co.
3:25 P.M.—Peroxide Bleach Baths and Some Factors Influencing their Stability
H. F. Campbell, E. I. du Pont de Nemours & Co.
3:55 P.M.—Synthetic Resins: Their Development and Application to Textiles
H. H. Power, Rohm & Haas Co.
4:30 P.M.—New Developments in the Application of Naphthols and Vats for Dyeing and Printing
S. H. Williams, General Dyestuff Corporation.
5:00 P.M.—Activities of the Raw Silk Committee of the National Association of Hosiery Manufacturers
E. M. Schenck, National Association of Hosiery Manufacturers.
2:00 P.M.—Bridge Tournament for Ladies.
7:00 P.M.—BANQUET. (Dress optional)
Toastmaster: A. R. Thompson, Jr.
7:55 P.M.—ENTERTAINMENT.
9:15 P.M.—Speakers
Hon. E. D. Bass, *Mayor of Chattanooga*
Dr. L. A. Olney
William H. Cady
Dr. Robert E. Rose
10:00 P.M.—Textile Ball.
11:30 P.M.—Style Show.
11:45 P.M.—Floor Show.
12:00 P.M.—Dancing Continued.

DECEMBER 6TH AND 7TH

AND CONVENTION

ROBERT E. ROSE
President

WILLIAM R. MOORHOUSE
Treasurer

ARTHUR R. THOMPSON JR.
Vice-President

WILLIAM I. KELLY JR.
Chairman, General Arrangements Committee

Program—15th Annual Meeting & Convention—held at the Read House, Chattanooga, Tenn, December, 1935. From American Dyestuff Reporter, pages 682 & 683, issue of December 2, 1935

Southeastern Section

A KEMPTON HAYNES

MEMBERS of the Association living in the southern part of Georgia, Alabama and Mississippi were finding it difficult to attend meetings of the South Central Section and the Piedmont Section prior to 1931, because of the distance from their place of work. Consequently, a group decided to meet at the Textile School of the Georgia Institute of Technology, Atlanta, Ga, on May 9, 1931 to discuss possible formation of an organization or a new section to become active in the affairs of the AATCC and add strength to the other sections already formed in the Southern Region.

A committee composed of C B Ordway, Alabama Polytechnic Institute, Auburn, Ala; M T Johnson, Hillside Cotton Mills, LaGrange, Ga; C A Jones, Georgia Institute of Technology; Wycliff C Jackson, Lowell Bleachery, South Griffin, Ga; E A Feimster Jr, Eagle & Phenix Mills, Columbus, Ga; and W F Christman, Russell Manufacturing Co, Alexander City, Ala, was appointed by H S Busby of the Textile Department of Georgia Tech to investigate the wisdom of forming a new organization of chemists, dyers, finishers, salesmen and others interested in the application of dyes and chemicals in the textile industry or affiliating themselves with the AATCC. This group met on June 20, 1931 at the Ralston Hotel in Columbus, Ga, formed a temporary organization, and voted to affiliate with the AATCC as the Southeastern Section. The following officers were elected:

Chairman: E A Feimster Jr
Treasurer: Roddy A Field Jr
Secretary: Charles B Ordway.

Approval was given by the Council for the Southeastern Section's formation on October 15, 1931.

This Section, through the years, has had steady growth. It has held three or four meetings per year at Atlanta, Columbus and other principal textile cities in the area.

On December 2 and 3, 1938, the Southeastern Section was host to the 18th Annual Meeting at the Biltmore Hotel, Atlanta, Ga. Since that time, the Section has been host, along with the other Sections of the Southern Region, on two other occasions—the 1948 Convention in Augusta, Ga, and the 1954 Convention in 1954.

The past chairmen of the Southeastern Section are as follows:

E A Feimster 1931-32-36-37
Charles B Ordway 1933
C A Jones 1934-35
Robert W Philip 1938-39
Perrin N Collier 1940-41
Robert J McCamy 1942
John P Harrison 1943
Oliver G Edwards 1944-45
A Kempton Haynes 1946-47
C Russell Gill 1948-49
H Gillespie Smith 1950-51
S Jack Davis 1952-53
T Howard McCamy 1954-55
James W Swiney 1956-57
William B Griffin 1957-58

Washington Section

ROBERT T GRAHAM

THE initial meeting of the Washington Section was held January 9, 1953, at the Watergate Inn, Washington, DC. Fifty-six persons attended this organizational meeting, which was called by Walter M Scott, secretary *pro tem* of the Section. By unanimous vote the following were elected to guide the Section during its first year:

Chairman: Milton Harris
Vice Chairman: Henry D Barker
Secretary: George S Buck Jr
Treasurer: Herbert A Ehrman
Councilor: Walter M Scott.

Since its inception, the Washington Section has attracted not only members from local textile manufacturing and finishing organizations, but also representatives from various government groups, laboratory groups, both private and government, trade association groups, and chemical manufacturing concerns. This broad range of interest within the Section has been a distinct advantage and benefit to all members. The subjects of the papers delivered at the various meetings during the past six to seven years have likewise covered a wide range of the textile industry from the technical and scientific aspects of the newer synthetic fibers and the newer finishes to the reactions and viewpoints of the general consumer of textiles and textile apparel.

The Washington Section has been active in two Intersectional Contests, taking first prize in 1954 and second prize in 1956.

During these years we have been fortunate to have the capable leadership of four excellent Section Chairman. Following Milton Harris, who served a two-year term of office, George S Buck Jr and George P Fulton served two years in the chair. Arnold M Sookne is currently chairman.

9TH AMERICAN DYESTUFF REPORTER AWARD

THE winner of the ninth annual AMERICAN DYESTUFF REPORTER Award will be announced at the Awards Luncheon on Thursday, October 8th, at the Park Sheraton Hotel, Washington.

Judges for this year's contest, appointed by the AATCC Publications Committee are: Hector C Borghetty, General Aniline & Film Corp, *Chairman,* Carl Z Draves, General Dyestuff Co, and Paul B Stam, J P Stevens & Co.

The Award was endowed by the Howes Publishing Company, Inc, as a memorial to Alfred P Howes, founder of the AMERICAN DYESTUFF REPORTER. Its purpose is to encourage the presentation of the best possible papers before local and national meetings of the Association. The Award, $200 annually, is presented to the author or authors of the paper considered best in the opinion of the judges. Any technical paper presented before a local or national meeting of the AATCC and published in the *Proceedings* as they appear in the AMERICAN DYESTUFF REPORTER is eligible with the following exceptions: Intersectional Contest papers, papers by employees of the AATCC, reports of work substantially subsidized by AATCC, or reports of research committees. It is a condition of eligibility that the paper have its first publication in the *Proceedings.* Papers published in the *Proceedings* from July 1st of one year to June 30th of the next year are considered in each judging period. Previous winners are shown in the table below.

Year	*Authors*	*Title*	*Where Presented*	*Date of Publication*
1951	Mason Hayek and Fred C Chromey, E I du Pont de Nemours & Co, Inc	"The Measurement of Static Electricity"	1950 National Convention	March 5, 1951
1952	Charles J Lyle, Joseph J Iannarone and Robert J Thomas, E I du Pont de Nemours & Co, Inc	"High-Temperature Dyeing of New Synthetic Fibers"	Rhode Island Section	September 17, 1952
1953	Robert H Blaker, E I du Pont de Nemours & Co, Inc	"Principles of Copper Dyeing of Polyacrylonitrile Fibers: The Controlled Redox-Potential Method"	1952 National Convention	February 2, 1953
1954	Charles L Zimmerman, American Cyanamid Co	"The Application of Dyes to Textile Fibers at High Temperatures"	Metropolitan Section	September 14, 1953
1955	Henry E Millson, American Cyanamid Co	"The Microdyeoscope: Microscopical Observations of Dyeing"	Metropolitan, Southeastern, Mid-West, Delaware Valley and Rhode Island Sections	June 20, 1955
1956	Fred Fortess, Celanese Corp of America	"Dyeing, Finishing and Heat Treating Arnel Acetate"	Metropolitan Section	August 1, 1955
1957	Irving A Berstein, Controls for Radiation, Inc	"Applications of Radio-Activity in the Textile Industry"	Piedmont Section	June 3, 1957
1958	Emery I Valko, Giuliana C Tesoro and Waldek L Ginilewicz, Onyx Oil and Chemical Co	"Elimination of Static Electricity from Textiles by Chemical Finishing"	1957 National Convention	June 16, 1958

A HISTORY OF TEXTILE EDUCATION IN THE SOUTHERN REGION

Alabama Polytechnic Institute

CLEVELAND L ADAMS
Head
School of Textile Technology
Alabama Polytechnic Institute
Auburn, Alabama

THE Textile Department of Alabama Polytechnic Institute (Auburn) was founded as the School of Textile Engineering in 1929 under the direction of Edmond W Camp. Originally, one degree was granted —Bachelor of Science in Textile Engineering—which was divided into four options that began in the sophomore year. These four options were: Textile Engineering, Textile Bleaching and Dyeing, Textile Design, and Textile Administration.

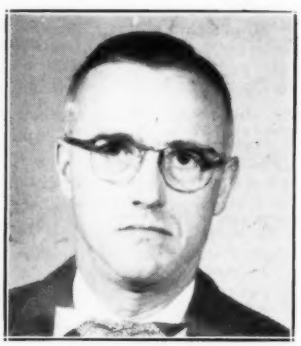
Shortly after World War II, the name of the School of Textile Engineering was changed to the School of Textile Technology as a department under the Division of Engineering. At the same time the name was changed, the types of degrees offered were changed to Bachelor of Science in Textile Engineering and Bachelor of Science in Textile Chemistry. Since 1952 three types of degrees have been offered by Auburn's School of Textile Technology: Bachelor of Textile Engineering, Bachelor of Textile Management, and Bachelor of textile Chemistry. In addition, a two-year certificate course in Textile Manufacturing is available for students who are unable to attend the full four years.

Upon the retirement of Mr Camp in 1949, W Charles Knight was appointed acting head of the School of Textile Technology. Mr Knight was succeeded in 1952 by Cleveland Adams, who is the present head of the Textile School.

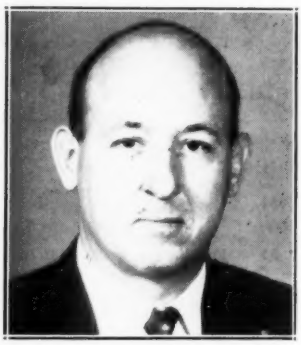
At the present time, the faculty of the Auburn School of Textile Technology is composed of Cleveland L Adams, head professor; Charles W Knight, associate professor of weaving and design; Edward Taylor, assistant professor of yarn manufacturing; William Waters, associate professor of research; and James H Cox, assistant professor of textile chemistry.

Front view, School of Textile Technology, Alabama Polytechnic Institute

C L Adams



W C Knight



J H Cox

Clemson College

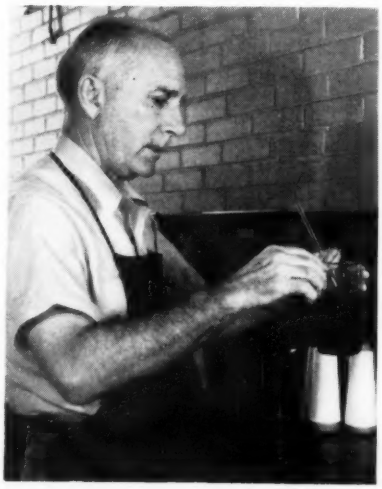
GASTON GAGE
Dean
School of Textiles
Clemson College
Clemson, SC

IN an address to the cadets on the opening day of college in September, 1898, Dr Hartzog, Clemson College's third president, commented . . . "Today the doors of the first Textile School in the South are thrown open to students." He stated that the invested capital of the textile industry in South Carolina was $120,000,000.00. Today this capital is more than $600,000,000.00.

The Clemson Textile School opened in 1898 in the charge of J H M Beaty, who came from the managership of one of the mills of the state. He was joined in a year or two by F D Frissell, a graduate of Philadelphia Textile Institute, who headed weaving and designing. A year later they were joined by L C Raiford who headed the dyeing. He was a graduate pharmacist from Brown University. In these years, no textile subjects were taught until the Junior year.

In 1908, Fred Taylor, who now is retired from the USDA and lives at Clemson, came to head the yarn manufacturing. At that time C W McSwain, who was a Clemson graduate, was in charge of the weaving and designing and C S Doggett was director of the School and in charge of dyeing. Mr Doggett remained a director of the School until 1927 when he was succeeded by H H Willis. During Mr Willis' service, the title was changed to dean. Mr Willis in turn resigned in 1943 and was succeeded by R K Eaton as acting dean. Mr Eaton, had been head of the yarn manufacturing department since 1923, took the acting deanship as a temporary appointment, not desirous of the permanent appointment because of his health. Mr Eaton was succeeded in 1945 by H M Brown who for many years had been head of the physics department at Clemson. Dr Brown resigned in 1957 and was succeeded by the present dean, Gaston Gage.

From the beginnings of the School through 1920 the textile course was entitled "Textile Industry." Beginning in 1921 the course was called "Textile Engineering." In 1924 an additional curriculum was added, known as "Textile Industrial Education." This course was designed to train teachers for high schools that wished to offer textile subjects. It continued as such until 1943, when it was discontinued. There were not many graduates after the first three years.



Prof Joseph Lindsay, head
Textile Chemistry Dept
School of Textiles
Clemson College

A major course in weaving and designing was begun in 1931 and continued through 1942. There were never more than three to five students were graduated from this course each year.

In 1931 the major course in Textile chemistry was begun and has continued to the present time. There have been about ten or twelve students graduated in textile chemistry each year.

After the Second World War, there was a general curriculum revision throughout the College. In the School of Textiles, the old Textile Engineering Course was revised, the few engineering subjects that were left were dropped, and more of the social sciences and textile management courses were added. The name was changed to "Textile Manufacturing." At the same time, a new curriculum in "Textile Engineering" was adopted, including more engineering courses than had been in the old "Textile Engineering" course. The textile chemistry curriculum was continued with only minor changes.

Following an extensive study of all the textile courses, major changes were made in 1958. A core of textile courses was retained, and a full years' work in quality control was added to all majors. The Textile Engineering major was changed to Textile Science, after the elimination of basic engi-

Sirrine Hall
School of Textiles
Clemson College

neering subjects and the substitution of advanced work in mathematics, physics and chemistry. The Textile Manufacturing major was changed to Textile Management by the addition of new courses in the humanities.

Except for the classes of 1902 and 1903, which numbered 17 and 21 graduates, respectively, the number of graduates from the Textile School before 1925 remained small, never as many as twenty, a good part of the time closer to ten, and in 1908 and 1909 there were no graduates. In 1925 the graduating class went above thirty, but again dropped down so that thirty was not reached again until 1934. From then on there was a steady increase until World War II took all students. Up until that time, the largest class was in 1941 when 88 were graduated. After the War, with the return of veterans, there was a great increase in the enrollment in the School of Textiles and it reached its peak in 1950 when 216 degrees were aw rded.

The present textile building, Sirrine Hall, was occupied in September, 1938. It was built during the deanship of H H Willis, as a PWA project at a cost of about $485,000.00. It would probably take $2,000,000.00 to replace it today. At the time it was completed, there were no funds for new equipment. Soon afterwards, however, the South Carolina Legislature appropriated $50,000 for equipment and the mills of South Carolina raised another $50,000. By this time, however, World War II had started and equipment could not be purchased until 1947. In 1950, largely through the effort of Sen Charles E Daniel, who is a life member of the board of trustees, about $300,000.00 was made available to the school for additional equipment.

With gifts and discounts from the makers of equipment, the value of equipment procured is far more than the money that was spent. All equipment in the School of Textiles is valued at about $2,000,000.00. This expansion program was completed in 1951. It was at this time that Sirrine Hall was dedicated.

In the early years, not many Textile School graduates went into industry. David and Harry Jennings, brothers who graduated in 1902, both went into the textile industry and became mill presidents. It was not until about 1920 that the graduates started going into the textile industry and its allied fields in large numbers. Beginning with this date there is a rather imposing list of graduates who have reached high places in the industry.

At present, the Clemson Textile School is organized as follows: Gaston Gage, dean and head, Department of Yarn Manufacturing; Joseph Lindsay, head, Department of Textile Chemistry; T A Campbell, head, Department of Textile Management; T D Efland, head, Department of Textile Research; A E McKenna, head, Department of Weaving and Designing.

Georgia Institute of Technology

JAMES L TAYLOR
Director
A French Textile School
Georgia Institute of Technology
Atlanta, Ga

A French Textile School of the Georgia Institute of Technology gave the first instruction in textiles south of the Mason-Dixon line in February of 1899. The School was established in response to the demands for instruction in the arts and sciences directly applicable to the cotton textile industry. Later this was broadened to include, in addition, a more comprehensive study of the properties and uses of textile fibers in general, both natural and synthetics.

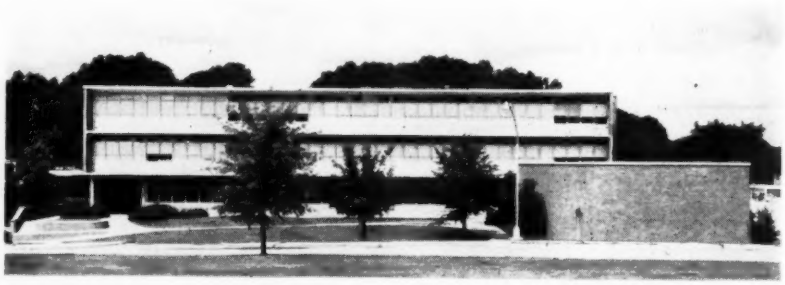
Prior to the completion of a building, the first courses in textiles were given in classrooms of the Academic Building. In 1900 the Textile School was transferred to the then new A French Building.

This building was a splendid example of the mill construction of that time—the outside walls, for example, being 27 inches thick. Its three floors contained ample space for classrooms and laboratories containing textile equipment. The power for driving the machines was derived from a Lane & Bodley Corliss steam engine located in the basement of the building.

In 1947, the Governor of Georgia authorized funds for a new building to house the School. As a result, the A French Textile School moved into its present building in 1949. By the time the construction began, the textile industry, through the Cotton Manufacturers Association of Georgia, had raised a sizable sum of money for the specific purpose of aiding textile education in the state.

These funds, administered through the Textile Education Foundation of Georgia, Inc, made possible the complete equipping of the new building. Because of this industry-wide cooperation and help, the new building was designated the Harrison Hightower Building in honor of the guiding spirit and first president of the Textile Education Foundation.

The Harrison Hightower Building was designed for a complete separation of the laboratory area from the classroom and office areas. The building contains eight classrooms, a student lounge, a graduate lounge, a conference room, a library, an air-conditioned auditorium with 300 theater-type seats, and an exhibition



Front view, new building, A French Textile School

Original building, A French Textile School

New building, A French Textile School

gallery containing 3,300 square feet of floor space. (This exhibition space is available, free of charge, for the display of textile materials, textile machinery, and allied products of interest to the textile student and/or textile industry.)

The large laboratory area is ideally arranged for an even flow of stock from the opener room through weaving and finishing. The equipment in each laboratory has been carefully selected and arranged so that it is representative of common industry practice and flexible enough for both instructional and research purposes. Each laboratory is equipped with its own air-conditioning system, capable of producing a wide range of temperature and humidity.

From its inception, the A French Textile School has offered a four-year course of instruction leading to a degree. At the present time, two undergraduate degrees, B S in Textiles and Bachelor of Textile Engineering, are offered. Either of these degrees may be taken under the regular plan or the cooperative plan. Under the regular plan, the student attends school for the entire nine-month regular school year and may, at his option, also attend during the summer quarters. Under the cooperative plan, the student attends school in alternate quarters and works in alternate quarters. In this way, the student may earn a portion of the money required for his education and obtain valuable experience which will aid him after graduation.

Each of these degree programs requires a basic study of textile manufacturing and for this purpose the Textile School offers courses in yarn preparation, weaving, dyeing and finishing, testing, costing, design and analysis, and synthetics.

The A French Textile School also confers Master's degrees in both Textiles and Textile Engineering. For this program, graduate level courses in yarn manufacture, weaving, dyeing, testing, and high polymers are offered. Each student must select most of these courses in addition to courses in other engineering schools on the campus. A thesis is also required for a Master's degree.

The early faculty of the school was obtained by securing specialists from the older established textile schools in the East, and from the textile industry. The present faculty represents a wide variety of experience and interests. In addition to teaching, the faculty is capable of handling investigations involving knowledge of almost any facet of the textile industry.

The first director of the A French Textile School was W N Randle, a graduate of the Philadelphia Textile School. Succeeding directors, in the order of their service, include the following:

J W Bailey (Lowell Textile Institute), C B Seals (Philadelphia Textile School), H S Busby (Massachusetts Institute of Technology), C A Jones (Georgia Institute of Technology), H A Dickert (University of North Carolina), and J L Taylor (University of North Carolina).

North Carolina State College

HENRY A RUTHERFORD
Head
Department of Textile Chemistry
School of Textiles
North Carolina State College
Raleigh, NC

THE General Assembly of North Carolina appropriated $10,000 in the spring of 1901 to build a Textile Building at the State's Agricultural and Mechanical College. The building was started in the summer of 1901 and completed early in 1902. It was a two-story brick building 125 feet long and 75 feet wide. The building was a typical example of the standard construction used in the cotton mills of that period. The carding and spinning equipment was located on the top floor; the looms and warp preparation machinery were placed on the ground floor; and the basement was used by the Dyeing Department.

During the summer of 1901, with a new building in the process of construction and considerable expansion contemplated, Henry M Wilson was promoted from instructor in cotton manufacturing to professor of textile industry and permitted to employ an additional teacher for the Textile Department. His selection of

an instructor was an exceedingly wise one. He secured the services of Thomas Nelson, a young Englishman from Lowell Textile School, and as every textile alumnus of North Carolina State College knows, Dr Nelson made a remarkable contribution to textile education in the South. From the fall of 1901 until his resignation five years later, Mr Wilson headed the Textile Department and taught the courses in carding and spinning, while Dr Nelson taught the courses in textile designing, warp preparation and weaving. The first courses in dyeing were taught by G S Fraps of the Chemistry Department, but in the fall of 1902 an instructor of dyeing was added to the textile staff. Philip R French, Albert A Haskell and John H Shuford served respectively one-, two-, and three-year periods in that position.

The scholastic year 1901-1902 was a very busy one for both Mr Wilson and Dr Nelson. At the beginning of the school year, Watauga Hall was destroyed by fire, and the textile machinery which was in Holladay Hall had to be moved to the partially completed Textile Building to make room for the dining hall which had been located previously in Watauga Hall. The Textile Building was completed early in 1902, and before the end of the school year much additional equipment, such as pickers, cards, spinning frames, twisters, winders, looms, and some dyeing equipment, was secured, installed, and placed in operation. Funds for purchasing equipment were limited, but the machinery builders were generous. Much of the original equipment was either donated by the makers, or sold to the School at a considerable discount. Thus, in 1902, only three years after textile instruction was begun, the College had a Textile Department that was well equipped to serve the textile industry of the State. During the summer of 1906, following Mr Wilson's resignation, Dr Nelson was promoted to a full professorship in textile industry and selected to head the Textile Department. At the same time two additional members were added to the textile faculty. Bartholomew M Parker, a graduate of the College, an alumnus of Lowell Textile School, and a teacher in the Textile Department of Clemson College, was employed as assistant professor of textile industry and took charge of the work in carding and spinning. Herbert N Steed was promoted from a student assistant to instructor in weaving and designing. In the fall of 1908, John E Halstead, a graduate of Leeds University in England, was employed as instructor in dyeing. For six consecutive years the Textile faculty, composed of Nelson, Parker, Steed, and Halstead, remained unchanged.

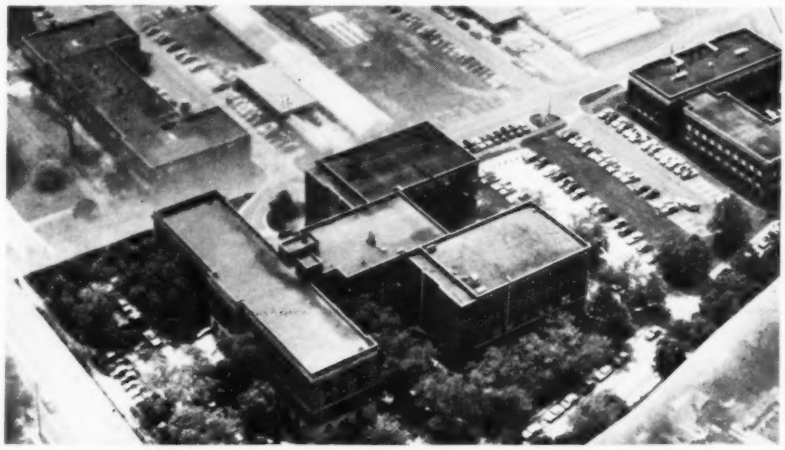
The first Textile Building, N C State College, 1902

From its inception, the aim of the Textile Department was to instruct students in the theory and practice of manufacturing textiles. That considerable progress was made in the early years was demonstrated by the fact that, at the Jamestown Tercentennial held in Virginia in 1907 to commemorate the first permanent settlement in America, the Jury of Awards conferred a gold medal on the Textile Department for fabrics designed and woven by its students.

However, these were precarious years for the Textile Department. Textile education was a new thing in the South and not very popular with the operating officials in the mills, many of whom knew very little of what constituted a textile education. They were skeptical about taking college-trained men into their organizations. Long hours of labor, low wages for beginners, an indifferent and at times antagonistic attitude on the part of supervisory officials did not make a textile career attractive to many young men. The rank and file of the State's citizens knew nothing about the opportunities in the textile industry for college-trained men. These conditions did not attract students, and it was 15 years before the enrollment of full-time day students exceeded 50 in any one year. In the first decade only 38 men completed the requirements for a degree in textiles.

In those trying days, Dr Nelson and his associates had to work with a threefold purpose in mind. Their primary function was to teach students; but at every opportunity they had to try to convince the mill

Dean Emeritus Thomas Nelson (left) and Dean Malcolm E Campbell, N C State College School of Textiles



The present two units of The School of Textiles are at the West end of the N C State College campus. The building on the left (foreground) houses facilities for academic work. The Textile Research Center is on the right.

officials that it would be a paying investment to take textile graduates into their organizations and give them the practical training which would qualify them for executive and supervisory positions; and finally they had to sell to the people of North Carolina the fact that, in the textile industry, North Carolina boys could find opportunities for advancement in their own State. Truly, the pioneer textile graduates had a difficult time convincing executives that they were capable of developing into competent leaders in this field. Despite the obstacles which confronted them, many of the young men demonstrated the value of textile education by eventually attaining positions of prominence in the textile industry. Their success coupled with the success of graduates who followed them, gradually wore down the prejudice against college-trained men, and ultimately created a demand for them. The younger graduates of North Carolina State College and other textile schools owe a real debt of gratitude to these men who, by their hard work, made the path to success much easier.

Just as the Textile Department was beginning to gain some recognition in the textile industry, a calamity occurred that for a time threatened its very existence. On March 24, 1914 the Textile Building and its equipment were almost completely destroyed by fire.

A blanket insurance policy carried by the State on all College buildings was so inadequate that it did not cover the loss sustained. In fact, the insurance received was hardly sufficient to restore the building. This was particularly unfortunate because a large portion of the equipment had been either donated or consigned to the College with the understanding that it would be amply covered in case of damage. When the machinery builders realized that they would receive no compensation for the equipment that was lost, they were extremely critical of North Carolina's Insurance Commissioner. Their attitude was, and justifiably so, that the machines they gave or loaned to the School should have been adequately insured.

Low enrollment for a number of years, coupled with the loss incurred by the fire, caused the College authorities to debate the wisdom of continuing the Textile Department. D H Hill, then president of the College, said in an interview that it was a question whether or not the Textile Building would be rebuilt. His indecision might have been influenced by the fact that Mississipi A & M College did discontinue its Textile Department which had been started early in the century. After discussing the question thoroughly, the board of trustees wisely decided to allow the Department to remain, and to erect a new and larger building on the original site. It was to be similar in design, but 25 feet longer than the original structure.

With the new building under construction, Dr Nelson was given the embarrassing assignment of visiting the machinery builders and urging them to make more contributions to the Department. He performed admirably. In spite of the loss they sustained and their view of the State's short-sightedness, he succeeded in influencing a number of them to make new donations or furnish machines at a substantial reduction, usually half-price. Some additional equipment was purchased from Mississippi A & M College. In a remarkably short time, largely due to Dr Nelson's untiring efforts and the cooperation he received from machinery builders and influencial manufacturers, the Textile Department was able to resume its activities, well equipped to render service to the industry.

The board of trustees, on June 8, 1925, removed the Department from the School of Engineering and established the Textile School. Dr Nelson was elected dean of the new school, and James McDowell was employed as director of textile research. Plans were formulated to enlarge the Textile Building, and increase the scope of the School by adding new curricula and developing a program for research and extension. Dr Brooks and Mr Nelson had hoped that the North Carolina cotton manufacturers would aid the School in developing such a program, but their suggestion for funds was not accepted. It had been their intention to secure an experienced manufacturer to serve as a liaison man between the mills and the School.

Shortly after the Textile School was established, three members of the staff, J T Hilton, T R Hart, and A H Grimshaw, were placed in charge of the Divisions of Yarn Manufacture, Weaving and Designing, and Textile Chemistry and Dyeing, respectively. Later they were promoted to full professorships and designated as department heads, positions they filled until after Dr Nelson's retirement as dean in 1943. They aided materially in developing the Textile School into an outstanding institution with an international reputation.

When the three-story, eighty-foot addition to the east end of the Building was completed in 1926, extensive improvements were made and a variety of new equipment added. These included an experimental room and two well-equipped research laboratories, one for yarns and fabrics, the other for dyestuffs and chemicals. All the old opening and picking machines were replaced with the latest type of machines available. The experimental room was outfitted with a complete unit of yarn-manufacturing machinery including several types of spinning frames. It was housed in a separate room, fully humidified, so that experiments could be made under actual mill conditions without in any way interfering with the regular laboratory work of the students. At that time the Textile School was the only institution in America to have such a pilot plant.

During the depression years of the

NC STATE COLLEGE STUDENT CHAPTER, AATCC (1958-9)—Top row (l to r): Warlick, Ward, Mason, Yuceyar, Dossa, Seago. Center row: Smith, Wilson, Asbury, Daniels, Mayse, Hodge, Newell, Mullis, Swicegood, Sanghvi, Lee, Gotuaco. Front row: Ward, Barringer, Baker, Nix

early thirties, unemployment reached a high peak in the United States. It is significant that, under such conditions, the enrollment in the Textile School increased tremendously, rising from an average of 139 for the five-year period ending with the scholastic year 1932-33, to an average of 334 for the next five years. While many institutions experienced difficulty in placing their graduates, the Textile School received a lot of publicity, because year after year its graduates were readily absorbed by the industry.

The increased enrollment made an enlarged building and expanded facilities a necessity. The General Assembly of 1937 appropriated $15,000 to be used in purchasing new equipment, and $45,000 to enlarge the building. Upon investigation it was found that any addition which could be built for the money available would be totally inadequate to serve the needs of the School; also that an enlargement of the building would seriously affect the topography of that section of the campus.

The College authorities wisely decided to wait until funds could be secured to provide more space. The $15,000 appropriation was used to modernize the weave room. All the old plain looms were replaced by new automatic ones and several new cotton, silk, and rayon dobby looms were added. New machines and testing apparatus were also added to the dyeing department and research laboratories. A variety of new equipment had been added a few years previously to the Yarn Manufacturing Department.

Additional funds were appropriated by the 1938 Special Session of the General Assembly to supplement a Public Works Administration allotment for construction of an entirely new Textile Building. The faculty of the Textile School recommended to the Buildings and Grounds Committee of the College that the new building be erected on Hillsboro Street on a site just west of Patterson Hall.

J E Sirrine and Co, Greenville, SC, was engaged as engineers for the project with George Watts Carr, of Durham, NC, as associate architect. When the plans were approved, they called for a four-story, fireproof, T-shaped structure of concrete and steel that contained approximately 74,000 square feet of floor space. Actual work on the new structure began early in January 1939, and the contract called for its completion in 180 working days.

When the building was completed in the fall of 1939, the excellent equipment that the Textile School had in Tompkins Hall was transferred to it and supplemented by a new woolen unit, a rayon slasher and other machines that cost approximately $50,000. The new building was dedicated on March 5, 1940. Two wings were added to it in 1950.

In 1943, a faculty committee, after months of investigation and a number of interviews, unanimously recommended Malcolm E Campbell, research manager for the Textile Research Institute, as the most suitable person to succeed Dean Nelson upon his retirement. Dr Nelson retired in September of that year with the title of dean emeritus and professor of textile design. Although relieved of his administrative duties, Dr Nelson remained an active member of the textile staff and continued to teach advanced courses in textile design and fabric analysis until illness forced his complete retirement in 1949, while he was serving his 48th year as a member of the NC State College faculty.

A new era for the School of Textiles began with the administration of Dean Malcolm E Campbell. Under his progressive leadership, remarkable progress has been made. Generous appropriations by the General Assembly, financial assistance by the North Carolina Textile Foundation, and the enthusiastic support of the manufacturers have made possible an expansion program that has established the School of Textiles as one of the largest and best-equipped institutions of its kind in the world. Dean Campbell's genial personality and untiring efforts have been largely responsible for the cooperation and support of the Legislature and the industry.

The enlargement of the Textile Building and installation of new equipment represent only a part of the progress made by the School of Textiles since 1943. Three new departments — Knitting, Textile Research, and Machine Design and Development—have been organized; a Textile Library and Placement Bureau have been established; closer contact with manufacturing plants has been obtained by adding a textile consultant to the staff; the curricula have been revised and broadened by the introduction of new courses. The Department of Textile Research now occupies its own building and has been renamed the Textile Research Center. The total value of the equipment in the School is of the order of 2.5 million dollars. In all, about 2,000 students have been graduated from the School of Textiles and many of them now hold high positions in the textile industry.

A complete history of the School of Textiles was published in 1951. It was written by Prof T R Hart, director of instruction, who died January, 1956. We are indebted to Professor Hart for much of the above material.

Information with respect to the early activities of the Student Chapter of the AATCC at NC State College is lacking. The Chapter can be traced back to 1930 when its president was R A Gilliam, now vice president of Burlington Mills. Since the war, the Chapter has been quite active and has participated generously in the various activities in the School of Textiles.

1959 AATCC TEXTILE DYEING AND FINISHING EXHIBIT

Technical and informative exhibits of dyestuffs, chemical auxiliaries, equipment and services for wet processing will be open starting at 4 PM, Wednesday, October 7 and from 10 AM to 6 PM both Thursday and Friday, October 8 and 9 in the Park Sheraton Exhibit Hall.

AMERICAN DYESTUFF REPORTER will exhibit at Booth 18 with the following in attendance: Norman A Johnson, editor; Charles A Whitehead, managing editor; Myron D Reeser, business manager; Herbert A Stauderman, advertising manager.

Descriptions of the various exhibits follow.

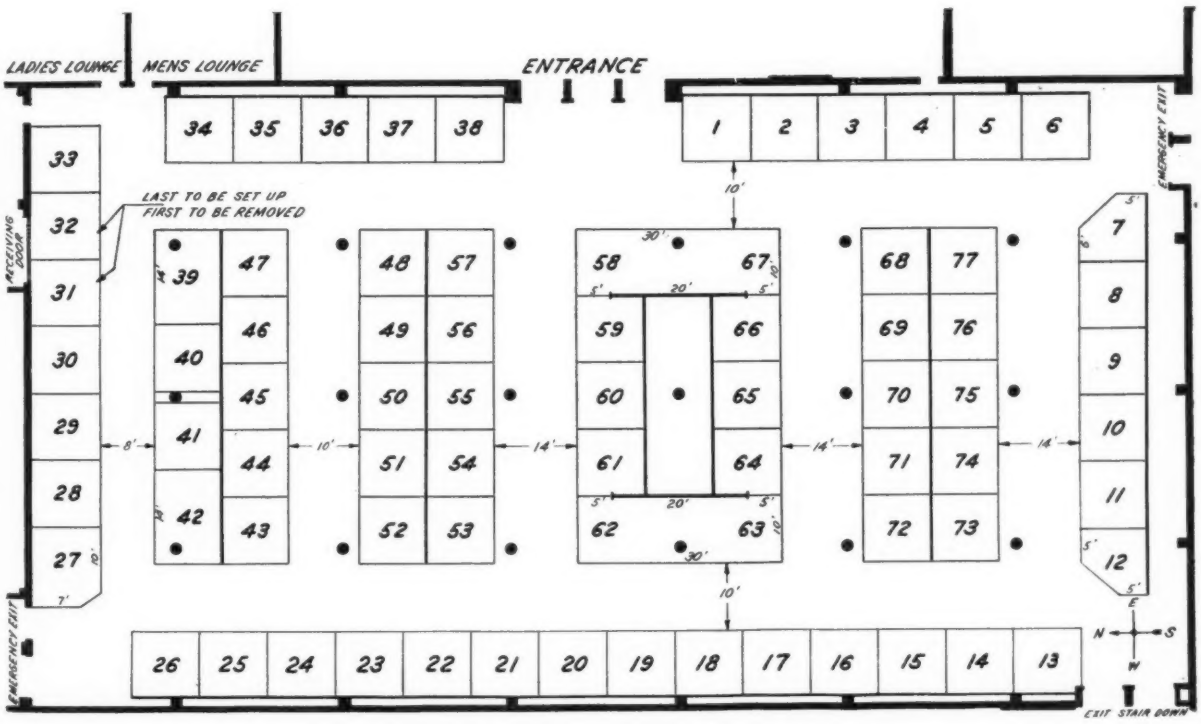


Exhibit Floor Plan, Park-Sheraton Hotel, Washington, DC

EXHIBIT DESCRIPTIONS

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

P O Box 28
Lowell, Mass
Booths 31-32-33

The theme of this exhibit will be "How the AATCC Serves the Textile and Related Industries." New developments in the Association's research and technical activities will be featured.

In attendance: Harold W Stiegler, director of research; George J Mandikos, research associate and technical manager; G Robert Thompson, research associate and staff editor; Glen M Kidder, research associate; Miss Toby R Koffman, junior research associate.

ATLAS ELECTRIC DEVICES CO, INC

4114 N Ravenswood Ave
Chicago 13, Ill
Booth 39

On display will be the latest models of the Fade-Ometer, Launder-Ometer, Accelerotor, Scorch Tester and Random Tumble Pilling Tester as used by the textile industry for evaluating the permanence and performance characteristics of their products.

In attendance: J E Norton, vice president; M J Babey, sales representative; R R Metzinger, engineer.

BECCO CHEMICAL DIVISION
Food Machinery and Chemical Corp

Station B
Buffalo 7, N Y
Booth 69

This exhibit will be devoted to the use of hydrogen peroxide in textile processing.

In attendance: D H Nelson, division manager; A P Shutts, sales manager; J R Hopkins, assistant sales manager; M A Noonan, manager, New York-Philadelphia territory; P D Caine, manager, New England territory; J F Whalen, manager, Midwest territory; F X Nerney, manager, Southeastern territory; D S Quern, manager, Southern territory; E A Dalmas, assistant manager, Southern territory; B J Bishop, sales representative, Southern territory; B K Easton, manager, textile applications; E J Elliott, textile applications.

CIBA CO, INC

Fair Lawn, N J
Booths 19-20-21

Exhibited will be Cibacron and Cibarolan dyes in dyeing and printing and the Microfix system in dyeing. Illustrated will be Phobotex FTC, a permanent water repellent.

In attendance: Charles J Weidmann, vice president and technical director; E L Caswell, manager, Fair Lawn laboratory; E P Ward, technical manager, Southern district; F Raff, laboratory manager, Metropolitan district; Paul J Luck, manager, chemical specialties division; Peter Cook, technical demonstrator, chemical specialties division; Rudolph Berthoud, field supervisor, chemical specialties division; Ernest H Hart, sales promotion, chemical specialties division.

CUSTOM SCIENTIFIC INSTRUMENTS, INC

541-543 Devon St
Kearny, N J
Booth 3

The following will be on display: gear runout tester and roll runout indicator for checking rolls of drawing, roving and spinning frames; traveler hardness tester for checking the opening at which travelers break; C & R tester and low pressure thickness gauge for measuring thickness; mechanical cotton blender; cohesion tester; custom tension recordograph; flex tester.

In attendance: H J Bultman, Jr.

DAILY NEWS RECORD

7 East 12th St
New York 3, N Y
Booth 77

Trade publication.

DIAMOND CRYSTAL SALT CO

St Clair, Mich
Booth 60

Exhibited will be various types of salt, both high grade evaporated and pure Louisiana rock salt, which are of value to the textile as well as the coloring industries. Technical literature will be available and samples of material which have been processed with Diamond Crystal products will be displayed.

In attendance: C W Schornstheimer, assistant manager, industrial sales; W Lonsdale, vice president, industrial sales.

GASTON COUNTY DYEING MACHINE CO

Stanley, N C
Booth 48

A sample laboratory dyeing machine, with pressurized expansion tank, for yarn packages, small cloth beams and raw stock will be exhibited.

In attendance: Gordon Hacker, general manager; Walter Newcomb, salesman; A P March, sales representative.

B F GOODRICH CHEMICAL CO
A Division of The B F Goodrich Co

3135 Euclid Ave
Cleveland 15, O
Booth 61

This exhibit will feature "Products for Textile Improvement"—Hycar acrylic and nitrile latices, Geon vinyl materials, and Carbopol water-soluble resins.

In attendance: L L Shailer, manager, sales development, textile chemicals; H M Sprock Jr and G W Flanagan, sales representatives.

THE GOODYEAR TIRE & RUBBER CO
Chemical Division

Akron 16, O
Booths 56-57

This exhibit will feature typical applications for Pliolite, Chemigum and Pliovic latices in the textile

industry. A variety of samples will be displayed to illustrate the use of these latices in nonwoven fabric binders, carpet backings, fabric finishes, warp sizings and printing inks. Technical literature on a new resin dispersion, Pliolite Latex 141, will be available along with information concerning its textile applications.

In attendance (chemical division personnel): H R Thies, general manager; C O McNeer, general sales manager; J E Warner, manager, coatings dept; W F Gerrow, Atlanta district manager; A R Merritt, Hartford district manager; J S Brice and J E Weldon, senior sales representatives; J R Houlette, advertising manager.

THE HILTON-DAVIS CHEMICAL CO
A Division of Sterling Drug Inc

2235 Langdon Farm Road
Cincinnati 13, O
Booths 16-17

This exhibit will feature on revolving pylons the following products: Hiltone water-in-oil pigment printing colors, Seabond oil-in-water pigment printing colors, and Skytone pigment padding colors. Other products to be shown will be naphthols, fast color salts and bases, Spectrosols and optical brighteners.

In attendance: S Y Stribling III, William A Green, Willard L Sharp, George Nickles, J Dorman Compton, Nelson S Knaggs.

HUNTER ASSOCIATES LABORATORY, INC

5421 Brier Ridge Road
McLean, Va
Booth 47

Exhibited will be the Hunterlab whiteness reflectometer, color difference meter, and Lustermeter for optical measurement of textile fabrics, yarns and fibers. Techniques for fluorescent brightener evaluation and direct color-difference measurement will be demonstrated.

In attendance: Mrs Mary B Spicer, sales manager; Richard S Hunter, president.

INDUSTRIAL RAYON CORP

660 Union Commerce Bldg
Cleveland 1, O
Booth 22

This exhibit will be centered around a new drip-dry finish for draperies.

In attendance: V J Dionne, manager of market development; representatives of sales and service departments.

INSTRUMENT DEVELOPMENT LABORATORIES, INC

67 Mechanic St
Attleboro, Mass
Booth 36

The new model "D" Color-Eye, a combination colorimeter and abridged spectrophotometer for laboratory and production matching and controlling of colored textile products, will be displayed. In addition, a new color tolerance computer for use with Color-Eye will also be demonstrated. A sample spinner accessory for the Model "D" will be shown which permits the measurement of yarns, tricot, gabardine, twills, etc.

In attendance: D R Hall, F R Johnson.

INTERNATIONAL SALT CO, INC

Scranton, Pa
Booth 4

This exhibit will include the complete line of Sterling salt products for the textile industry as well as the new plastic salt dissolver.

In attendance: W W Harris Jr, A J Hulsebosch, N M Agnew, O W McKeown.

LESTOIL, INC
A Subsidiary of Adell Chemical Co

51 Garfield St
Holyoke, Mass
Booth 37

This exhibit will feature various applications of D-2 Lestoil in the textile industry. Literature will be distributed and technical information available.

In attendance: Robert Mercer, technical service; C S Tanner, Ernest Blakeley, Reynolds Hays and Howard Gerlack (Charles S Tanner Co, distributor).

METTLER INSTRUMENT CORP

Hightstown, N J
Booth 2

Representative models of precision and analytical balances will be shown. Special attention will be given to the new Type H23 C10/13 yarn balance.

In attendance: D L Jones, vice president and sales manager; Neal L Cooper and Robert Moeller, representatives.

MORTON SALT CO

110 N Wacker Drive
Chicago 6, Ill
Booth 66

The theme of this exhibit is the correct application of various salt grades for certain dye applications with emphasis on the new fiber-reactive dyes. This will be explained by the use of photographs of typical installation together with charts and maps.

In attendance: J M Culp, textile and chemical staff consultant; Frank E Etzel Jr, assistant national accounts manager; E R Ravenel, assistant division manager—industrial; B W Jennings, industrial salesman.

NOPCO CHEMICAL CO

60 Park Place
Newark 1, N J
Booth 53

This booth will be shared with Nopco's subsidiary, Jacques Wolf and Co.

Nopco will primarily promote new products and materials treated with some of the following products will be displayed: Nopco 9092, a fulling and scouring compound; Nopcotex AR-35, a cationic softener; Nopco KF-99, an all-purpose textile defoamer; and Polymul MS-40.

In attendance: R F McClellan, vice president—sales; L E Rossiter, New England regional sales manager; W F Dolan, D S Rion and E Brupbacher, salesmen; D J Schaaf, manager, textile chemicals department; C R Zust, assistant manager, textile chemicals department; C H Lighthipe, laboratory director; R G Schaubhut, manager, textile chemicals laboratory; P Carlson, textile laboratory, Cedartown, Ga.

ONYX OIL & CHEMICAL CO

190 Warren St
Jersey City 2, N J
Booth 13

This exhibit will feature the latest technology regarding developments made with Aston 108.

In attendance: Philip E MacLean, sales manager; Louis S Goldberg, manager, marketing and advertising; Morton Schlesinger, manager, customer service; Harold C Wood, New England district manager; Clarence E Pickard, sales representative.

ROHM & HAAS CO

Washington Square
Philadelphia 5, Pa
Booth 68

This booth will feature the use of acrylic emulsions as fabric backing and binder, and the use of Rhonite resins in the finishing of fabrics.

In attendance: R G Thomas, J T Taylor, T G Sloan, H F Lawton, E J McNamara, R G Lawrence.

SANDOZ, INC

61 Van Dam St
New York 13, N Y
Booth 14

The latest Sandoz developments in dyestuffs and chemicals will be displayed. Current shade cards, technical literature, etc, will be available.

THE TANATEX CHEMICAL CORP

Belleville Turnpike
Kearny, N J
Booth 55

Samples of chemicals for difficult processing will be displayed. 100% polyester fabrics printed with the new Tanalid* process will be shown as well as various carrier-dyed goods. Recent developments in the research laboratories will be demonstrated.

In attendance: Peter J Scott, president; Sidney M Weinstein, vice president; Leonard C Shive and Adolf Dabal, technical representatives; Theodore B Manheim, product manager.

*Patent pending

TESTFABRICS INC

55 Van Dam St
New York 13, N Y
Booth 30

Fabrics and skeins of yarn for laboratory use will be on display. Weighing of skeins will be demonstrated. Also on display will be AATCC standards furnished by Testfabrics.

In attendance: Werner Klaas, president; Mrs Marianne Blunck, demonstrator.

TEXTILE BULLETIN

218 W Morehead St
Charlotte, N C
Booth 34

Trade publication.

TEXTILE INDUSTRIES

806 Peachtree St, N E
Atlanta, Ga
Booth 38

Trade publication.

TEXTILE WORLD

330 West 42nd St
New York 36, N Y
Booth 1

Trade publication.

UNION CARBIDE CHEMICALS CO
Division of Union Carbide Corp

30 East 42nd St
New York 17, N Y
Booths 58-67

This exhibit will feature the newest of more than 100 synthetic organic chemicals for the textile industry. Introduced will be the new nonsoiling Ucon textile lubricant SR-2, one of seven synthetic textile lubricants; intermediates for crease-resistant finishes; and intermediates for home and textile mill softeners.

In attendance: Technical representatives from the Eastern division and technical specialists from Mellon Institute and New York.

WALLERSTEIN CO
Division of Baxter Laboratories, Inc

Wallerstein Square
Mariners Harbor
Staten Island 3, N Y
Booth 54

This will be a reception booth and technical literature will be available.

In attendance: James J Casserly, J Andrew Clark, J L Huckabee, J C Robertson.

WARWICK CHEMICAL DIV
Sun Chemical Corp

750 Third Ave
New York 17, N Y
Booth 59

This exhibit will feature the Norane-Permafresh finish for knit and woven fabrics. It will emphasize the following characteristics of this finish: durable, "wash-and-wear," "drip-dry," spot- and stain-resistant, durable water repellency.

In attendance: Norman E Alexander, president of Sun Chemical; Eric N Blackstead, vice president and general manager; William V Machaver, personnel director of Sun Chemical; Harold C Whittemore, general manager of Warwick; Angelo J Picciotti, sales manager of Warwick; Herman B Goldstein, technical director of Warwick; Louis A Edelman, advertising and promotion manager; Thomas B Spence, Southern district sales manager; Steve Nye, Southern technical service manager; Gerhard E Sprenger, research manager; David Koenig, New England application laboratory director; I F Laramee; William E Breagy and Charles A Lamendola, New England sales representatives; Roscoe J Breazeale, A Lee McArthur 3rd, W E H Searcy 3rd and Arthur L Watson, Southern sales representatives; George D Maynard Jr, John M Senesac, Stuart L Sperber and Fred Hennessey, New York sales representatives.

JACQUES WOLF & CO

Passaic, N J
Booth 53

This booth will be shared with the parent company, Nopco Chemical Co.

Printed fabrics prepared with Jacques Wolf printing gums will be shown, as well as samples of Monopole oil, sodium hydrosulfite, printing gums, enzymes and textile auxiliaries.

In attendance: G J Desmond, treasurer; W E Brewer, sales manager; D A Hoffman, assistant sales manager; M G Thurston, sales representative, South Carolina area; M F Costello, sales representative, Metropolitan New York area; G W Apsey, chief chemist.

EMERY I VALKO

16th Olney Medalist

Emery I Valko, associate professor of chemistry, Lowell Technological Institute, Lowell, Mass, will be awarded the AATCC's highest honor, the Olney Medal, at the Awards Luncheon to be held at noon, October 8, 1959 at the Park-Sheraton Hotel, Washington, DC, at the 38th National Convention of AATCC.

We are indebted to Barbara Brown, director of information, Lowell Technological Institute, for the preparation of this biography of the Medalist.

Emery I Valko
16th Olney Medalist

IN the charming town of Abony, near Budapest, Hungary, the recipient of the 1959 Olney Medal was born on Sept 1, 1902. Imre Valko attended school in Budapest until his 19th year when he entered the University of Vienna to embark upon a brilliant career in chemistry which was to culminate in several major discoveries beneficial to man in many directions. His work toward the PhD degree, which he took in 1926, was guided by the late Wolfgang Pauli, biochemist and colloid chemist and father of the Nobel Prize winner of the same name, now also deceased. The young Valko's absorbing interest in his chosen field resulted early in achievement and renown, as he started during his thesis work to publish, jointly with his thesis supervisor. Before his doctoral thesis was completed, one of his publications already had been quoted in a standard textbook on colloid chemistry.

Evincing even as a student his belief in a principle he holds to this day, that of never limiting interest to a narrow field, he sought such courses unrelated to chemistry as the dramas of Henrik Ibsen, Hindu philosophy, and the philosophy of Friedrich Nietzsche. In these he found intense enjoyment, and in the beautiful city of Vienna, rich in musical tradition, he delighted in the fulfillment of his love of opera, begun in childhood in Budapest.

For two years after obtaining his degree he remained at the university, writing during that time, again with Dr Pauli, a 600-page book in German, "Electrochemistry of Colloids," penning the entire manuscript in longhand.

The theory of colloid chemistry was then a controversial subject among three or four major schools, and this first book was designed not to represent a compromise but to forward instead the theory of one school, that represented by Pauli. As might be expected, the work reaped some criticism from opponents of that theory; on the other hand, it was accorded a gratifying degree of recognition by those uncommitted to a particular school. The book exerted influence in many fields of theoretical and applied colloid chemistry, for instance, in the theory of the electrochemical behavior of soils.

Valko's activities at the institute of Pauli marked also the beginning of his interest in industrial processes. A publication in 1926 gave a colloid chemical theory of the dispersion of lime soap by excess soap or by surface-active agents resistant to hardness. (It is interesting to note that this publication was written years before the first synthetic detergents were discovered). This publication marked, too, the beginning of his interest in surface-active agents, an interest he has maintained throughout his professional career.

One of the papers published during his Viennese period, written jointly with Blank, explained the phenomenon of stratification during electrodialysis, the phenomenon which forms the basis of electrodecantation (later also known as the electrophoresis-convection process). Until that time this phenomenon was considered puzzling, but Valko and Blank provided a very simple explanation—the gravity-induced sinking of layers concentrated at the membranes, which proved to be correct. Dr Valko comments that, from that time on, he has held that the simplest explanations are apt to be the correct ones.

The relation between the "Doctor Father" Pauli and his young disciple gradually matured into an intimate friendship which was to last until Pauli's death in 1954.

In 1929 the medalist went to I G Farben (now Badische) in Ludwigshafen, Germany, where he says he had the good fortune to work under the direction of two outstanding scientists, Herman F Mark, now director of the Polymer Research Institute at the Polytechnic Institute of Brooklyn, and the late K H Meyer, who afterward became professor at Geneva University. At the time, the group to which Valko belonged, headed by Meyer and Mark, was one of the three groups simultaneously responsible for the development of modern polymer chemistry. (The others were Carothers of Wilmington, Del, and Staudinger of Freiburg).

Adhering to the adage, "when in Rome . . . ", and in accordance with European custom, upon joining the German firm, Dr Valko translated his Hungarian-given name of Imre to its German equivalent, Emerich. Later, when he came to the United States, he was to adopt the English equivalent, Emery, and to retain the "I" for Imre as his middle initial. (Some confusion has resulted from the dual name, for example, in some chemical indices where a single publication is listed twice as authored by Emerich Valko and by Emery Valko).

Fondly recalling his days at I G Farben, Dr Valko discusses the ideal conditions offered a research chemist there: considerable freedom in selecting a research project, ample facilities in the instrumental and technical help available, and a stimulating "pioneer" spirit pervading his particular group.

His cooperation with Dr Meyer and G von Susich, now with the Quartermaster Research and Engineering Command in Natick, Mass, resulted in the publication of a joint paper proposing a theory of rubberlike elasticity, which subsequently became generally accepted. L R G Treloar, in his book, "The Physics of Rubber Elasticity" (Oxford, Clarendon Press, 1949, page 8), states, "The first exponents of the now generally accepted theory of rubber elasticity were Meyer, von Susich, and Valko (1932) and Karrer (1932, 1933),

1921, first-year student at the University of Vienna (picture from his student identity card)

1926, research associate, University of Vienna

though the latter author was thinking primarily of muscle." The comment continues, " . . . Meyer, von Susich, and Valko clearly appreciated the relation between elasticity and the ability to take up an irregular or statistically determined form by virtue of the interchange of energy between its constituent elements and surrounding atoms. This is the fundamental concept of the now generally accepted theory of rubber elasticity . . . Nevertheless, the revolutionary character of the theory was in itself a hindrance to its ready acceptance, and many years elapsed before scientists generally were prepared to acknowledge its superiority over rival interpretations of rubber elasticity." With characteristic modesty, the medalist says of this recognition, "The major credit for that paper should go to my co-authors rather than to myself."

Although his interest in the many facets of chemistry already was encompassing, Dr Valko now directed his activities to other subjects, especially after Drs Mark and Meyer left Ludwigshafen. His concern with the mechanism of the dyeing process was fostered through an altogether different interest, one which was to be a turning-point in his personal life.

In the azo dye department at I G Farben, he noticed one day a very pretty girl and inquired about her. Fraeulein Hermine Herminghausen was a chemist engaged in work related to dyeing, and in order to further his acquaintance the young colloid chemist turned his attention, serious as well as personal, to the dyeing field. (Eventually, in 1935, "Herminchen" became Mrs Valko).

Once engrossed in the scientific subject, however, Dr Valko found that the theory of the dyeing process was a confused one, and in his passion for simplification he endeavored to bring order and clarity to the field. His publications therein formed the nucleus of his third book. (His second, "Colloid Chemistry of Proteins," also was a fruit of continued collaboration with Dr Pauli during his Ludwigshafen years).

This third work, entitled "Colloid Chemical Principles of Textile Processing," consisting of 700 pages, was widely acclaimed at its appearance as one of the major contributions to modern textile science. Because of its success it has long been out of print, and the medalist hopes for time one day to make extensive revisions compensating for recent developments in the field. The book, as well as the earlier one on proteins, has been translated into the Russian language and published by the Soviet Union.

Valko's approach to the theory of dyeing was based originally on the question of the role played by the size of dye particles or the degree of association with dye molecules in the dyeing process. As a tool of investigation he used chiefly the measurement of the diffusion coefficient of dyes in solution. This investigation led to a new concept of the process of direct dyeing, in agreement with the concept developed at the same time by S M Neale of Manchester and by J Boulton and T H Morton of Courtaulds in England.

Investigation of the dyeing process with metal-complex dyes resulted in the theory that the protein molecule of the wool fiber forms a chelate with a metal complex.

Study of the effect of leveling agents established the concept of "dye-affine" agents, which exert a retarding action on the dye by complexing it in the dyebath. An X-ray investigation made jointly with G von Susich established the significance of crystallization of the dye in the fiber for the behavior of vat dyes.

Dr Valko was also the first to point out the role of hydrogen-bonding in the dyeing process. Like the theory of elasticity, some of his ideas were too revolutionary to find immediate acceptance, but they always stimulated a great deal of discussion which, to a certain extent, is still going on.

Contemporaneously, Dr Valko's interest in the field of surface-active agents was growing. Sparked by his reading of Paul de Kruif's best-selling book, "The Microbe-Hunters," from this emerged also an abiding interest in surface-active germicides, resulting in the discovery of the cationic germicides. This phase of his work started with complexing a mercury salt with dodecylamine. He dissolved the complex in an excess of dodecylamine hydrochloride, that is, he made it water-soluble by adding the excess. The medalist submitted a sample to the bacteriological laboratory at I G Farben for a test as a germicide and, at the same time, submitted dodecylamine hydrochloride for a test as a control sample. "To my surprise," he declares, "the control showed just as high—an extremely high—efficiency as the mixture with the complex. Thus the germicidal efficiency of surface-active cations and quaternary ammonium compounds was established." After the discovery was made, G Domagk, head of the bacteriological laboratory, who later received the Nobel Prize for his discovery of the sulfa drugs, extended the investigation and published its results.

1930, "coffee break" in building 185, I G Farben, Ludwigshafen. Seated, left to right: Dr V Villager (former coworker of the organic chemist A von Bayer,) personnel manager of the research laboratory, now deceased; Dr G von Susich, physicist, now laboratory head, Quartermaster Research and Engineering Command, Natick, Mass; Dr Herman F Mark, research director, now director of the Institute of Polymer Research at Brooklyn. Standing, in the same order: The late Dr R Wierl, physicist; Dr B Jacobi, chemist, now with Chemische Werke Huels; the Medalist, Dr Valko; and Dr J Hengstenberg, physicist, now head of the Physical Control Department of BASF in Ludwigshafen.

Again, Dr Valko was among the first to demonstrate that synthetic detergents can be formed into toilet bars, some 20-25 years before they became commercial. "My trouble," he remarks parenthetically with a humorous twinkle, "has been that too often I was 25 years ahead of my time. Now I merely hope to keep a few months ahead!"

Much of Valko's work at I G Farben was reported only internally. However, some of this work was later published by the technical investigation teams of the occupying forces and, based on their reports, found their way into other publications. A systematic study of the nonionic surface-active agents was reported by the medalist jointly with F Guenther (inventor of the first synthetic wetting agent, "Nekal") in 1932. Their original graph was reprinted in *American Dyestuff Reporter 38*, 514 (1949) in a paper by P Sisley, and the main conclusions of this paper were also reported by Moillet and Collie in their book, "Surface Activity". Dr Valko finds it amusing to come across his work quoted anonymously. Through PB No. 7 0332 a report of Valko (jointly with H Pfitzner) is reprinted which proposed for the first time (1937) the three-dimensional formula for the Ca-chelate of ethylenediamine tetra acetic acid. In 1942 this formula was recognized as the correct one by the German stereochemist P Pfeiffer.

In the first years after Adolf Hitler imposed his dictatorship upon the German people, I G Farben, as the mightiest industrial concern in the world, maintained a certain degree of independence. However, the pressure exerted by the Nazis resulted in more and more interference, and in 1938 Dr Valko decided to leave Germany. In September, 1938, he attended as a visitor the Milwaukee meeting of the American Chemical Society. During his trip he visited R E Rose, director of the technical laboratory at DuPont and past president of the American Association of Textile Chemists and Colorists. He still acknowledges gratefully the help he received from Dr and Mrs Rose in his first acquaintance with American customs and in establishing contact with American personalities in his field. As a result of these contacts, Dr Valko accepted a position with Onyx Oil and Chemical Company, and in March, 1939, together with his wife and four-month old daughter Ellie (Elinor M, now a senior at Smith College where she is majoring in education), he left the Third Reich to settle in the New World.

In the following two years, he worked in the St Johns, Quebec, laboratory of Onyx, then in May, 1941, was transferred to the company's Jersey City laboratories. He became a United States citizen in 1946.

After Pearl Harbor, Dr Valko's work at Onyx was directed mainly toward supplying the needs of the armed forces. Based on his early work in the field of cationic germicides, he developed for Onyx the production of quaternary ammonium compounds, which have been used in large quantities by the Army and Navy as germicides.

The medalist claims that the successful production of the first ton lot of germicide for the armed forces, under his personal supervision, was one of the greatest thrills he has experienced in professional life. It gave him particular satisfaction to be responsible for the largest volume-production of a compound ever made before or since, the germicidal efficiency of which he himself discovered in test-tube experiments made 10 years previously.

Another development which followed shortly was the production of nonionic surface-active agents used as salt-water detergent by the mobile laundry of the Army. Again Dr Valko's initial interest in the nonionic surface-active agents was essentially theoretical. "As a matter of fact," he avers, "the expression, 'nonionic surface-active agents', was coined by myself in 1934, and in 1944, I was supervising the large-volume production of these compounds."

That he did not lose interest in the theoretical relation, however, is shown by his publications (with A S Dubois, now with West Disinfectant) dealing with the mechanism of the antibacterial action of surface-active cations. Many of the cationic germacides which have found widespread application, such as the highly efficient chlorobenzyl derivatives and those based on unsaturated fatty derivatives, were first introduced by the medalist.

In 1946 Dr Valko became director of research for E F Drew & Co, Boonton, NJ. Patents which were the result of his activities at Drew deal with such divergent products as plasticizers, foam-inhibitors, and edible emulsifiers for ice cream and shortening. From 1949 to 1954, he was an independent consultant and was associated with the Polytechnic Institute of Brooklyn, renewing his association with Dr Mark. In 1954, Dr Valko returned to Onyx as vice president in charge of research and development, a position which he left in 1958 to accept the appointment to his present position as associate professor of chemistry at Lowell Technological Institute, Lowell, Massachusetts.

During his second period of activity with Onyx, he developed, with a team headed by G C Tesoro (now at the Central Research Laboratory, J P Stevens & Co), a new class of durable antistatic finishes, described in several publications and patents. This work afforded the medalist considerable satisfaction because in it he was able to utilize much of his specialized knowledge and experience in widely

The basic concept which guided him in devising the blueprint of the molecule for the antistatic finish was one with which he became familiar when he worked on his first book, "Electrochemistry of Colloids," almost 30 years earlier, namely, that a gelled polyelectrolyte possesses almost as much electrical conductivity as the same polyelectrolyte in the form of a colloidal solution. He had been impressed by that fact in preparing a review of a paper published in 1924 by Miss M E Laing (later Mrs J W McBain of Stanford University), and he carried that impression through many years. It was the inherent simplicity of the principle (which factor Dr Valko deems often the indication of truth) that appealed to him and prompted him to tackle the problem of durable antistatic finish in a most efficient way.

"If I may say it without conceit, from my own experience I do not believe in narrow specialization, but rather in the fruitfulness of familiarity with widely different branches of chemistry. The best preparation for dealing with the problems of industrial chemistry is to be a specialist in many fields, instead of in just one." Himself indeed a specialist in many fields, he has earned international acclaim. Correspondents and reviewers in many countries have praised his work and given his writings such plaudits as "high didactic art," "too much commendation cannot be given this book," "a surprising clarity is evident despite the complexity of his subject and the conscientiousness of his reporting," "wholly admirable," "his systematic and masterly condensation of the subject is virtually beyond criticism."

Among the learned societies he has been invited to address are the American Association of Textile Chemists and Colorists, the American Chemical Society, the Society of Dyers and Colourists, the New York Academy of Sciences, the Society of Cosmetic Chemists, and the International Congress of Textile Chemists and Colorists. Dr Valko was chairman in 1958 of the Gordon Research Conference and in 1957 was session chairman of the Second International Conference of Surface-Activity, held in London.

Honors have come to him from many sources. He was the 1958 recipient of the American Dyestuff Reporter Award for authorship of the best technical paper of the year ("Elimination of Static Electricity from Textiles by Chemical Finishing," with G C Tesoro and W Ginilewicz, ADR 403), and he was among the first 10 overseas Fellows selected

With Dr Wolfgang Pauli the elder in the Tyrolean Alps, one week before the Medalist's marriage, 1935

by the Council of the Society of Dyers and Colourists, this in recognition of his work in the field of dyeing.

The Medalist is a Fellow of The Textile Institute (Great Britain) and a member of its American Panel. He is a Fellow also of the New York Academy of Sciences and of the American Association for the Advancement of Science. Dr Valko is a former member of the Governing Council of the Fiber Society and has been nominated for that position again in the coming year. From 1952 until 1956 he served as collaborator in the Cotton Fiber Section of the Southern Utilization Research Branch, U S Department of Agriculture.

His memberships include the American Chemical Society, the American Oil Chemists' Society, the Society of Cosmetic Chemists, and the American Association of Textile Technology. He is the author of three books, six review articles, 22 patents (U S, German, British, French, and Canadian), and 35 technical papers.

A superb linguist (Hungarian, German, English, and French), he turns leisuretime pursuits to operatic and classical music, "but as a listener, not an active musician. I enjoy hi-fi greatly, but my interest is strictly in the music, not the technique—as with an auto, I never look under the hood." The Valkos reside at 76 Wellesley Road in Belmont, Mass and in the past were devoted to mountaineering. But for the Medalist time now does not permit as much participation in that activity as he would like.

His real hobby, he says, is chemistry. "I derive more of a thrill from that than from any other pursuit. I have been fortunate in being able to work with a great deal of independence throughout my professional career. At I G Farben my superiors, Meyer and Mark and later M A Kunz, gave me quite a free choice in my selection of projects, and I was fortunate in having the confidence of my superiors at Onyx who also gave me practical freedom in selection. From personal happy experience in this regard I have formed my own philosophy to try to give my own cohorts as much responsibility and independence as they can carry."

That his allegiance to the fascinating area of textile chemistry is unshaken is evident in his statement, "While I recognize that the development of electronics and nucleonics presents an appeal to the younger generation, I still feel that textile chemistry offers problems and opportunities to the creative mind fully as challenging and rewarding as those in the newer fields."

* * *

The Olney Medal is a heavy cast piece bearing a likeness of Dr Louis Atwell Olney, founder of the AATCC, on the front, and a simple inscription on the reverse side. The award is endowed by Howes Publishing Co, Inc, New York, and is awarded by an AATCC committee to any citizen of the USA as recognition for "outstanding achievement in the field of textile chemistry, including the development of chemical agents or chemical processes used in the manufacture of textiles, or methods for their evaluation."

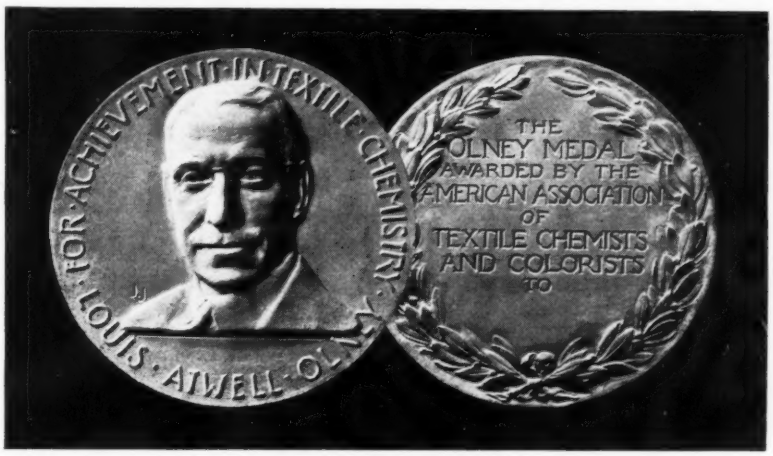
Details of published works and professional qualifications of those proposed each year for the medal are usually contained in nominating briefs delivered to the Awards Committee. This Committee then considers those nominated and makes a final choice.

Under rules agreed to by the Association and Howes Publishing Co, Inc, the award must be made by unanimous decision of the committee of five, which includes: the Association president (ex-officio); a member of the faculty of an educational institution awarding chemical degrees; an employee of a concern manufacturing chemical products used in textile wet processing; an employee

of a concern manufacturing textiles; a member at large of the Association.

Previous winners of the Olney Medal are:

1944—Louis A Olney
1945—Milton Harris
1946—William H Cady
1947—Edward R Schwarz
1948—Harold M Chase
1949—Charles A Seibert
1950—George L Royer
1951—Raymond W Jacoby
1952—Werner von Bergen
1953—Roland E Derby
1954—William D Appel
1955—Miles A Dahlen
1956—Walter J Hamburger
1957—P J Wood
1958—Henry E Millson



THE OLNEY MEDAL

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Ger P 662,911, "Manufacture of Detergents"

Ger P 699,406, "Disinfectants and Preservatives"

Ger P 710,169, "Shaped Washing Agents and Detergents"

BP 443,795, "Production of Shaped Washing Agents"

BP 497,373, "Filters for Plane Polarized Light"

BP 511,427, "Improvement in the Methylation of Amines"

FP 787,466, "Preservation and Treatment of Latex"

FP 850,811, "Durable Water Repellent"

Can P 439,923, "Textile Treatment" (with A S DuBois)

Can P 463,701, "Conversion of Alkylolamides"

USP 2,520,255, "Aromatic Diquaternary Ammonium Compounds" (with A S DuBois)

USP 2,542,642, "Heterocyclic Quaternary Ammonium Compounds" (with A S DuBois)

USP 2,606,838, "Emulsified Ice Cream Composition"

USP 2,610,125, "Edible Fatty Material"

USP 2,616,865, "Vinyl Chloride and Vinyl Acetate Copolymer"

USP 2,635,079, "Antifoam Material" (with J Kamlet)

USP 2,636,036, "Aromatic Nitrogen Compounds" (with A S DuBois)

USP 2,666,706, "Polyethylene Glycol Esters in Fat"

USP 2,882,185, "Water-Soluble Basic Polyamides" (with G C Tesoro & E D Szubin)

Abstracts OF TECHNICAL PAPERS TO BE PRESENTED AT WASHINGTON

SYMPOSIUM I—Paul B Stam, chairman

GENEVIEVE M SMITH

THE CONSUMER'S POINT OF VIEW

GENEVIEVE M SMITH
Textile Laboratory
Sears, Roebuck & Co
New York, NY

Returns to the retail store do not show that the average consumer is dissatisfied with "wash-and-wear" merchandise, but the individual consumer voices a completely different opinion. The average user tends to accept the "wash-and-wear" promotion knowing that she will need to press the garments after they are laundered. However, she does find most fabrics easier to iron.

Among the complaints voiced by individuals are these: the garments do not stand up to the claims made for them; some whites retain chlorine, becoming yellow and/or tender after laundering; soil is hard to remove; fabrics tear and wear out easily; the finish washed out; puckering at seams gives garments a poor appearance, particularly after they are laundered.

Improvement in application of resin and type of resin used have been made in the field of finishing. Many garment manufacturers have learned how to stitch seams so that the puckering problem has decreased. Even the promotional claims as to the necessity for ironing have been tempered.

There is a demand for good "wash-and-wear" and more of it is finding its way into the market.

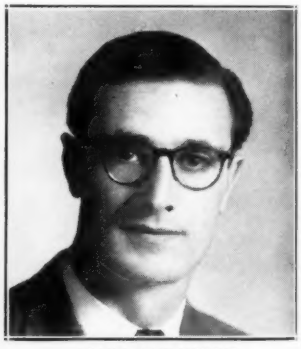
NEW DEVELOPMENTS IN EVALUATING "WASH-AND WEAR" PERFORMANCE

JAMES R BERCAW
Textile Fibers Department
E I duPont de Nemours & Co, Inc
Wilmington, Del

The "built-in" "wash-and-wear" performance of fabrics made from hydrophobic, thermoplastic fiber blends with cotton has reached a level of customer acceptance such that additional advances must come through subtle, incremental improvements in blends, construction and finishing, or through advent of a new fiber. Incremental improvements can be obtained, for example, through substituting rayon for cotton as a blending fiber with Dacron. Such improvements require the investigation of a large number of variables, and require sharper methods for assessing progress.

As a result, techniques have been developed for making and testing optimum small-scale fabric samples which reliably predict "wash-and-wear" performance of their broad-woven analogs. A more fundamental problem, that of objectively measuring fabric wrinkles, has been solved by a new application of an established principle involving low-angle light projection. A slit of high-intensity light when cast onto a fabric gives an exaggerated contour line of the fabric surface. This line can be analyzed manually or electronically to give an index of fabric wrinkling which is in excellent accord with subjective evaluations. It also has other applications, such as determining the ability of coloration and surface texture to mask fabric wrinkles.

JOHN F KRASNY



JOHN MENKART

PROGRESS IN "WASH-AND-WEAR" WOOL

JOHN F KRASNY and JOHN MENKART
Harris Research Laboratories, Inc
Washington, DC

Wool has many points in its favor in apparel use: comfort, pleasing hand, tailorability, sewability, and resistance to stains. It would be desirable to combine these advantages with the "easy-care" or "wash-and-wear" requirements of modern living. This paper will be an attempt to show where wool stands at present in the "wash-and-wear" field, and what problems need to be overcome for further progress.

The first stage of the study was an examination of the behavior of a wide range of commercial wool fabrics in modern home washing. Methods of evaluating the effects observed had to be developed, and will be described.

Wool fabrics have a tendency to shrink by felting when subjected to mechanical action while wet; however, the recent models of washing machines which have settings for mild laundering to accommodate "modern fabrics" produce little shrinkage in compact

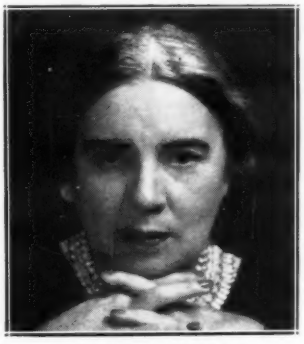
wool fabrics even without a nonshrink finish. Such fabrics do not shrink to any serious extent in tumble drying either. Most wool fabrics exhibit remarkable absence of mussing and wrinkling after washing and tumble drying—ie, they have a high "wash-and-wear" rating; however, in certain constructions, there is a tendency to form surface fuzz.

A range of wool fabrics—all fairly compact, and in medium and heavy weights—has been shown to be "wash-and-wear" without any special treatment. A series of fabrics has been constructed to study the effect of structural factors in detail. Preliminary results indicate that, in lighter, more open structures, shrinkproofing and setting finishes, as well as proper construction, will be needed in order to obtain full "wash-and-wear" properties.

MAN-MADE CELLULOSIC FIBERS IN "WASH-AND-WEAR"

A B HILTON, C V LUND, and A E MARTIN JR
Textile Research & Development Dept
Courtaulds (Alabama) Inc
Mobile, Ala

A discussion of fundamental fiber, yarn and fabric properties which influence "wash-and-wear" performance will be given and compared with laboratory methods of estimating such performance. The behavior of cross-linked viscose staple in blends with acrylic and polyester fibers will be compared with resin-treated cotton and resin-treated viscose fabrics. Points of comparison will be crease recovery angle, bending modulus, "wash-and-wear" ranking, as well as tensile properties. Included will be comparisons of dimensional stability and general behavior to laundering, properties of a high modulus viscose fiber, and indications of this fiber's behavior is the "wash-and-wear" field.



PAULINE B MACK

COMPARATIVE LAUNDERING PROPERTIES OF DIFFERENT TYPES OF "WASH-AND-WEAR" GARMENTS

PAULINE BEERY MACK, MARGUERITE BARRA, ATTELIA MULLER, and ELIZABETH THOMAS
College of Household Arts and Sciences
Texas Woman's University
Denton, Texas

Forty-two types of garments sold as having "wash-and-wear" characteristics were used in a study of their laundering behavior. Hand washing, laundering in an automatic home washing machine, and power laundering methods were used. The garments included children's slips, children's play clothes, women's slips, women's dresses, men's shirts, and men's work clothes.

The following types of fabrics were included: cotton; nylon; Dacron; cotton and Cupioni; cotton and nylon; cotton and Dacron; cotton and Arnel; and cotton and Kodel.

Following each laundering, the garments were rated by a panel of textile specialists according to a four-classification scheme on two bases: a) the appearance of the fabric; and b) the appearance of the seams and other stitching. The garments differed widely in the ratings received in each category, beginning with the first laundering.

After each fifth laundering, the garments were touched up with a hand iron until they were regarded as meeting an acceptable standard. The time required in the various cases differed, although it was far less in all cases than that which would have been needed for the ironing of a similar garment of which the fabric had not been of the wash and wear type.

Chlorine-retention tests were run on all of the fabrics before laundering; and some were found to be chlorine-retentive. Periodic breaking and tearing strength tests were made on the fabrics, which displayed marked differences in strength retention on repeated launderings, with tearing strength tending to be more amenable to loss than breaking strength.

SYMPOSIUM II— James E Greer, chairman

HENRY H LATHAM

RECENT DEVELOPMENTS IN FINISHING OF BLENDS

HENRY H LATHAM
Arkansas Co. Inc
Newark, NJ

This paper will discuss the production of cellulosic-hydrophobic fiber blended fabrics to meet the ultimate in performance standards demanded by a trade fraught with sales gimmicks. A comparison of processing by means of the outstanding developments in resin precursors, with methods of increasing resistance to abrasion, odor, yellowing, chlorine damage, consumer wash-down of hand, and storage deterioration will be presented. Catalysts and buffers will be noted along with details of their use in mills to affect yield of better-quality goods. Compounding of chemical additives and resins to give higher tensile and tear strength, better adhesion of resin to hydrophobe fiber, and more stability to processing baths tend to help the finisher avoid pick-off, spots, and tailing-off of finish. Examples of use of alkyds, latices, and plasticizers with the more com-

mon type of monomeric and polymeric resins will be given. These examples will show the variation in vital character of hand, and the removal of chance incompatibility of additives necessary for multifunctional fabric end-use. Also to be noted will be the tendency toward premercerization of cellulosic blends prior to bleaching, with use of more lubricant in bleaching to eliminate "memory marks" in the finished piece. A resume of methods used in better bonding of resin coating will be included.

PAUL L MEUNIER

ADVANCES IN THE TECHNOLOGY OF DYEING BLENDS CONTAINING DACRON POLYESTER FIBER

PAUL L MEUNIER
Technical Laboratory
E I duPont de Nemours & Co, Inc
Wilmington, Del

Recent progress in dyeing fabrics of Dacron blended with wool, rayon, cotton, Orlon, Acrilan, and Arnel will be discussed. Particular emphasis will be placed on blends of Dacron with wool for men's and women's wear in which the Dacron is dyed with disperse or cationic colors and the wool with acid, premetalized acid, or chrome dyes.

The effect of heat setting prior to dyeing on the absorption of disperse and cationic dyes by Dacron is an important consideration especially in the production of lightweight tropical suiting fabrics which tend to crease in beck dyeing. Data will be presented to show the effect on dyeability after heat setting at temperatures in the range of 280°F to 400°F. The present work includes the effect of heat setting on the dyeability of staple fibers of Type 54 Dacron and the new modified Type 64 Dacron. Previously such data were available only for filament Dacron.

Carrier dyeing of blends containing Dacron will also be discussed in relation to the acid modified Type 64 Dacron with disperse and cationic dyes.

The effects of dyeing time, dye selection and rates of dyeing on staining of the other components of blends and the resulting effect on fastness to solvent bleeding will be emphasized.

TECHNIQUES FOR UNION DYEING BLENDS OF ZEFRAN AND COTTON WITH VAT DYESTUFFS

ROBERT L BURGESS
James River Div
The Dow Chemical Company
Williamsburg, Va

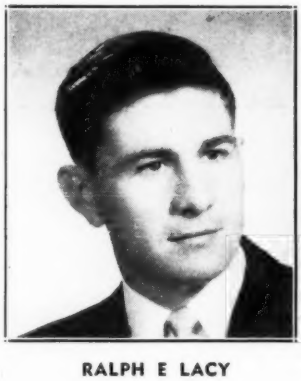
ROBERT L BURGESS

The "wash-and-wear" properties of Zefran acrylic fiber are said to be fully utilized when dyed with vat colors which withstand repeated launderings, household bleaches, sun exposure, perspiration, and other destructive influences encountered in normal use.

Light, medium and heavy percentages of the most widely used vat prototypes have been dyed on Zefran and cotton at temperatures from 120°F to 180°F. The medium and heavy percentages of color dye union shades in the general temperature range of 140°F to 180°F.

The light percentages of dyes may require a retarding agent for the Zefran. The most effective retarding agent found to date is 2,2′-dihydroxy-5, 5′-dichlorodiphenylmethane. The amount of retarding agent necessary to obtain unions when dyeing a low percentage of vat color has been determined for a representative series of vat dyes selected from the hot-dyeing, warm-dyeing and cold-dyeing types.

Combinations of vat dyes that dye union shades on Zefran and cotton in the package machine and when using the pad-jig method will be given.



RALPH E LACY

JACK DAYVAULT

DYEING AND FINISHING BLENDS OF ARNEL WITH ACRYLICS AND COTTON FOR CIRCULAR KNIT APPLICATIONS

RALPH E LACY and JACK DAYVAULT
Celanese Corp of America
Charlotte, NC

Arnel triacetate has made its entry into the circular knit field in blends and combinations with Orlon and with cotton. The inherent physical properties of Arnel

are said to contribute to properly engineered knit fabrics improved dimensional stability and pilling resistance. An increased scope of color styling through piece dyeing is possible because of differences in dyeing properties of Arnel, Orlon, and cotton.

Commercial one-bath procedures have been developed for dyeing Arnel/Orlon and Arnel/cotton knit fabrics into a range of union, reserve effect and cross-dyed shades.

The role of dye selection, pH control, surfactant agents, accelerants, and retarders in the development of a one-bath procedure for dyeing 50/50 Arnel/Orlon knit fabrics will be demonstrated. Selected cationic dyes for Orlon and disperse dyes for Arnel are used simultaneously in the same bath for dyeing this blend. This procedure makes possible shorter dyeing cycles than required by former two-bath procedures. It will be shown that colorfastness properties which meet commonly accepted standards in the knit industry can be easily obtained by the one-bath procedure.

Chemical and mechanical finishing techniques for the high-bulk Arnel/Orlon fabrics are similar to those used for the 100% acrylic and acrylic/wool blend knit fabrics.

In the Arnel/cotton blend and combination knit fabrics, disperse or azoic developed dyes are used for the Arnel. Aftertreated direct or developed dyes are used for the cotton. For several applications Arnel is said to afford adequate dimensional stability to the fabric; however, resin finishing for the cotton portion of the blend reportedly can be used to produce knit fabrics with very low shrinkage to washing.

The dyeing of Arnel/Acrilan blends has been investigated. Unions can be obtained by selective use of disperse dyes only or disperse and cationic dye combinations. Cross-dyed effects are limited because of dual affinity of Arnel and Acrilan for disperse dyes.

SYMPOSIUM III—Fred Fortess, chairman

WALTER J NEWCOMB

RECENT ADVANCES IN THE PRESSURE BEAM DYEING OF SYNTHETIC FABRICS

WALTER J NEWCOMB and GEORGE C WARD
Gaston County Dyeing Machine Co, Stanley, NC
Celanese Corp of America, Charlotte, NC

Pressure-beam-dyeing machines have been available for the last decade. The usefulness of this type of machine has been demonstrated consistently for the coloring of certain types of fabrics, among which are acetate tricot, Arnel tricot, nylon tricot, Arnel and nylon marquisette and ninons, filament Dacron fabrics, blends of polyester fibers and cotton and blends of polyester fibers with wool.

Recent mechanical advances in pressure-beam-dyeing machines include automatic heating and cooling, automatic pressure and flow control, automatic static-pressure chamber, a closed pressurized expansion tank, a running wash system and an automatic beam-revolving device. General methods will be given for the processing of typical standard fabrics, including those of blends of synthetic and natural fibers. Suggestions will be made for getting level dyeing, satisfactory fastness and proper setting of the fabric.

ROBERT M LESH

TWELVE MILLION YARDS OF NATURAL AND MAN-MADE FIBERS DYED ON THE SWEDISH PAD-ROLL MACHINE

ROBERT M LESH
Northern Dyeing Corp
Washington, NJ

The economic reasons which led to the purchase of the Swedish Pad-Roll machine by Northern Dyeing Corp will be followed by a discussion of the theoretical background of the pad-roll dyeing technique and a thorough description of the machine which evolved from this theory. Colored slides of the machine illustrating its many features will be shown.

The various types of dyes which are suitable for pad-roll operation, the laboratory technique for the matching of various shades, the consistency of results achieved, and the comparative cost of operation will be discussed. Samples of fabrics taken from production will be available for examination.

Of special interest will be a series of colored microscopic cross-sectional slides illustrating comparative results achieved by this dyeing technique. The evenness and degree of diffusion of the dyes throughout the various fibers will be seen.

Finally, a summary of the advantages and disadvantages of dyeing by this technique will be given.

PRESENT-DAY TRENDS IN BLEACHING

BERNARD K EASTON
Inorganic Research and Development Dept
Food Machinery and Chemical Corp
Buffalo, NY

In keeping with the general theme of this symposium, this paper will discuss the preparation and bleaching of fabrics which are today commanding the most attention.

First in this category are blends of cotton and the

BERNARD K EASTON

acrylic, polyester, and triacetate fibers respectively. Batch procedures will be described and then continuous procedures which can be adapted to today's equipment will be suggested.

A review of current practices in the preparation and bleaching of 100% cotton fabrics will reveal some interesting advances recently made in these procedures, particularly in the handling of the heavier fabrics, such as drills, twills, satins, etc, in open width. Why large yardages of these fabrics are still handled in batch form and the possibilities for greater use of continuous methods for processing these fabrics will be discussed.

Several highly interesting developments not yet publicized will be described.

J C ROEHL

THE MONFORTS REACTOR—A NEW CONTINUOUS-DYEING MACHINE

J C ROEHL
A Monforts Machine Works
M Gladbach, West Germany

The Monforts Reactor, embodying a continuous closed steam circuit, is said to represent a "revolutionary" invention for chemical and thermal reactions on textile materials under ideal conditions and in a fraction of the time previously required. The machine is compactly built as an integral unit consisting of pad, double-jacketed cylinder, endless Neoprene-faced blanket and washing, drying and heating mechanism for blanket.

The Reactor principle involves continuous passage for fabric through a special entrance pad to a steam-heated jacketed drum surrounded by an endless blanket with a smooth Neoprene surface which hermetically seals the fabric on the Reactor drum. A continuously operated washing, drying and heating mechanism is provided for both cylinder and blanket. Moisture within the fabric is generated into a steam pressure atmosphere surrounding the fabric during its passage around the cylinder.

To date the Reactor is said to have proven to be of exceptional value in the following processes: continuous desizing and open width; after print aging; in two-stage vat printing processes; development of vat colors in continuous vat-dyeing processes; dyeing with vat-sulfur and vat ester colors; dyeing with direct colors; application of naphtholate and dyeing with disperse dyestuffs on acetate and polyester fabrics.

J J IANNARONE JR

DYEING BLENDS OF DACRON POLYESTER FIBER AND COTTON BY THE THERMOSOL PROCESS

J J IANNARONE JR and WILLIAM J WYGAND JR
Organic Chemicals Dept
E I duPont de Nemours & Co, Inc
Wilmington, Del

The Thermosol Process is a continuous method of dyeing whereby dye fixation and penetration are accomplished with dry heat. It is said to be particularly effective in the application of disperse dyes to Dacron polyester fiber and its blends with cellulosic fibers. In the dyeing of this important blend, selected disperse dyes are used to dye the Dacron by the Thermosol Process and, where necessary, vat dyes are applied to the cotton by conventional procedures. Fabrics dyed in this manner are said to be generally equal in fastness to vat-dyed cotton and will meet "wash-and-wear" fastness requirements.

For many pastel shades, it may be possible to dye only the cotton portion of the blend with vat dyes applied by the pad-steam process; for light-to-medium shades, dyeing only the Dacron by the Thermosol Process may suffice. However, in heavy shades, it is necessary to dye both fibers in two separate operations. Recent laboratory work indicates that it may be possible to dye both the Dacron and the cotton in a one-pass operation using disperse dyes and fiber-reactive dyes, both of which can be applied to the respective fibers with dry heat.

Blends of Dacron type 64 polyester fiber and rayon can also be dyed advantageously by the Thermosol Process, it is claimed.

Fixation and penetration of disperse dyes applied by the Thermosol Process is said to be very rapid. Dye utilization is reported to be good and to compare favorably with that obtained by conventional aqueous procedures.

1959 AATCC INTERSECTIONAL CONTEST

THIS year's AATCC Intersectional Contest, to be held Friday afternoon, October 9th, will feature papers from seven Sections.

The Rhode Island Section maintains a commanding lead in the number of cumulative points attained since the inception of the Contest. Assigning values of 5, 3 and 2 for the first, second and third places respectively (the same ratio in which prize money is awarded), the cumulative standing is as follows:

Rhode Island—49	Northern New England—23
Metropolitan—36	Washington—8
Delaware Valley—35	Southeastern—7
Piedmont—32	

The record of winners, since the contest was inaugurated in 1940, is as follows:

1940—1st, R I; 2nd, S E; 3rd, DV
1941—1st, N Y; 2nd, DV; 3rd, S E
1942—1st, N Y; 2nd, N N E; 3rd, DV
1943—1st, DV; 2nd N N E; 3rd, Met
1944—1st, R I; 2nd, N N E; 3rd, Met
1945—1st, R I; 2nd, N N E; 3rd, Met
1946—1st, Met; 2nd, DV; 3rd, R I
1947—1st, N N E; 2nd, DV; 3rd, Met
1948—1st, Pied; 2nd, N N E; 3rd, DV
1949—1st, R I; 2nd, N N E; 3rd, Pied
1950—1st, Pied; 2nd, R I; 3rd, DV
1951—1st, Met; 2nd, R I; 3rd, DV
1952—1st, R I; 2nd, DV; 3rd, Met
1953—1st, R I; 2nd, Met; 3rd, DV
1954—1st, Wash; 2nd, Pied; 3rd, R I
1955—1st, R I; 2nd, DV; 3rd, Pied
1956—1st, Pied; 2nd, Wash; 3rd, R I
1957—1st, Pied; 2nd, Met; 3rd, S E
1958—1st, Pied; 2nd, DV; 3rd, R I

A glance at the above shows that the Rhode Island Section, in addition to leading in points, also leads in the number of first place awards, having won 7 times. Following in order is the Piedmont Section with 5, the Metropolitan Section with 4, and Delaware Valley, Northern New England, and Washington with 1 each. The Northern New England and Delaware Valley Sections lead with 6 second place awards followed by Rhode Island and Metropolitan with 2, and Southeastern, Piedmont and Washington with 1 each. In third place awards, the Delaware Valley Section leads with 6, followed by New York with 5, Rhode Island with 4, and Piedmont and Southeastern with two. The details of this year's contest follow.

THOMAS J GILLICK JR
Chairman, National Committee

ROLAND E DERBY JR
Member, National Committee

KENNETH A HOWRY
Member, National Committee

A HENRY GAEDE
Master of Ceremonies; Member, National Committee

LEE G JOHNSTON
Member, National Committee

ALBERT H RANT
Chief Justice

DONALD P HALLADA
Judge, Delaware Valley

JOHN HANLON
Judge, Hudson-Mohawk

CHARLES R TROMMER
Judge, Metropolitan

HARRY W ERICSON
Judge, Mid-West

Judges

Chief Justice

Albert H Rant

Delaware Valley Section

Donald P Hallada, *judge*
William S Sollenberger, *alternate*

Hudson-Mohawk Section

John Hanlon, *judge*
Victor Christopher, *alternate*

Metropolitan Section

Charles R Trommer, *judge*
Max W Winkler, *alternate*

Mid-West Section

Harry W Ericson, *judge*
Robert A Ford, *alternate*

Niagara Frontier Section

Kenneth A Lister, *judge*
W H Leyking, *alternate*

Northern New England Section

Herbert C Haller, *judge*
Samuel J Golub, *alternate*

Pacific Northwest Section

Robert Newman, *judge*
Ferd Ahl, *alternate*

Pacific Southwest Section

Robert A Fliegel, *judge*
David D Sanders, *alternate*

Rhode Island Section

William J. Jutras, *judge*
James Price, *alternate*

South Central Section

Henry C Crail, *judge*

Southeastern Section

Frank H Cooper, *judge*

Piedmont Section

Harley Y Jennings, *judge*
E. Pierce Ward, *alternate*

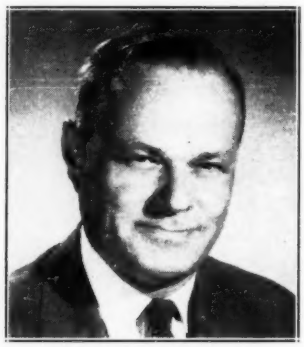
Washington Section

Louis R Mizell, *judge*
Nelson F Getchell, *alternate*

Western New England Section

R C Geering, *judge*
Mark Pettit, *alternate*

KENNETH A LISTER
Judge, Niagara Frontier



HERBERT C HALLER
Judge, Northern New England

ROBERT E NEWMAN
Judge, Pacific Northwest

ROBERT A FLIEGEL
Judge, Pacific Southwest

WILLIAM J JUTRAS JR
Judge, Rhode Island

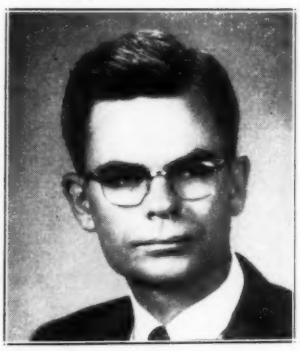
R C GEERING
Judge, Western New England

ROBERT A FORD
Alternate, Mid-West

HENRY C CRAIL
Judge, South Central

Alternate Judges

WILLIAM H LEYKING
Alternate, Niagara Frontier



FRANK H COOPER
Judge, Southeastern

WILLIAM S SOLLENBERGER
Alternate, Delaware Valley

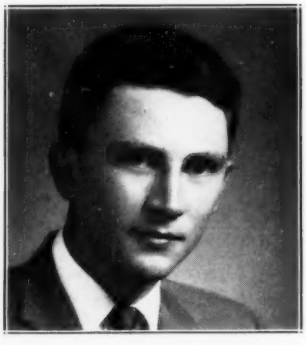
JAMES PRICE
Alternate, Rhode Island

HARLEY Y JENNINGS
Judge, Piedmont

MAX W WINKLER
Alternate, Metropolitan

PIERCE WARD
Alternate, Piedmont

Sectional Committees



JOSEPH J BENISCHECK
Chairman-speaker,
DelawareValley

Delaware Valley

JOSEPH J BENISCHECK, *chairman & speaker*
GULTEKIN CELIKIZ, *alternate speaker*
James B Egee
A F Felgendreger
Thomas H Hart
Samuel H Loper Jr
Henry E Millson
John McFarlane
E Michael McMahon
A E Raimo
Elias Scruggs
Murray E Spring
Richard B Stehle
P Theel
Homer E Wolfe

DANIEL FRISHMAN
Chairman-speaker
Northern New England

Northern New England

DANIEL FRISHMAN, *chairman & speaker*
Daniel P Collins
Harry Freedman
Samuel J Golub
Fritz Kobayashi
Henry L Pero

VICTOR S SALVIN
Chairman-speaker, Piedmont

Piedmont

VICTOR S SALVIN, *chairman & speaker*
K D Ballou
H S Baumann
D G Carmichael
F Fortess
J E Greer
P Gilchrist
J V Killheffer
C Powell
L C Shive
T W Westarp
V B Wright

WILLIAM E ALDRICH
Chairman-speaker, Rhode Island

Rhode Island

WILLIAM E ALDRICH, *chairman & speaker*
Edward N Alexander
William H Cady
Francis H Casey
William J Cooney
Frank Cutter
Edmund J Dupre
David C Hardman
Frank J Lachut
Alden D Nute
W George Parks
Robert H Phillips
Fernand Schlaeppi
William H Waitz Jr

South Central

A J KELLY, *chairman*
W F BROMMELSIEK, *speaker*
J E Burn
E A Freeman
R L Greenwood
E S Johnson
W F Luther
R E Maurer
W O Neeb
C B Ordway
J L Roberts
Karl Ruppenthal
Gordon O Smith
L R Waddey
Arthur Williams

Southeastern

WILLIAM POSTMAN, *chairman & speaker*
M S Birmingham Jr
Carl R Blumenstein
Ralph Champion Jr
James C Farrow
Robert B Hallowell
Richard E Hudson Jr
Cecil B Ray
James H Stradley
James L Taylor
Leon Tigler
Warren E Tiller

Washington

GEORGE H LOURIGAN, *chairman & speaker*
Josephine Blandford
John F Krasny
Fred Loibl Jr
Doris R Lyerly
Edward C Oliva
Werner Pels
Nada Poole
Leo Peloquin

A J KELLY
Chairman, South Central

W F BROMMELSIEK
Speaker, South Central

WILLIAM POSTMAN
Chairman-speaker, Southeastern

National Committee

THOMAS J GILLICK JR, *chairman*
ROLAND E DERBY JR
KENNETH A HOWRY
A HENRY GAEDE
LEE G JOHNSTON

Abstracts of Contest Papers

FLUORESCENT BRIGHTENERS AND BLUING AGENTS IN WOOL PROCESSING

Delaware Valley Section

Fluorescent brighteners and blue dyes often are used to adjust the off-white yellow color of wool to a more pleasing white desired for sales purposes. The dyes actually used for this have been determined by survey, and found by test to have generally poor wetfastness, poor lightfastness, or both. These are seldom applied with perfect uniformity, may cause drift of shade in subsequent continuous scouring, and may lead to difficulty in precise matching of very light dyes shades. The fluorescent whites are particularly troublesome, even in the skein dyeing of light to medium shades, and they migrate to some synthetic fibers in union dyeing. To what extent and in what way these agents contribute to processing difficulties are drawn from mill experience and are shown in laboratory dyeings, fastness tests, etc.

Difficulties in simple methods of detection of small amounts of these materials are discussed.

PILE FABRICS

Northern New England Section

Forty-one pile fabrics representing a wide range of weights and heights were prepared to study structural characteristics of such fabrics and the effect of pile height, weight, fiber denier, softener and fiber length on compressibility, recovery and tendency to tuft or mat. Quantitative relationships were found for such structural characteristics as change of weight with height, and for density of pile as a function of total fabric density; the latter relationship being a measure of efficiency of construction.

The most important new quantitative relationship relates compressibility to fabric construction:

$$S = k \log \left[\frac{h \sqrt{l}}{Nd^{1.2}} \right] - k \log \left[1 + \frac{1}{2} \frac{h \sqrt{l}}{Nd^{1.2}} \right] + C$$

where S is the percent decrease in pile height h under load l for a fabric containing N fibers (per unit area) of denier d. k and C are constants; the former representing the slope of this straight line and the latter the intercept. This equation tells us, for example, that a fabric prepared from 3-denier fibers will be compressed 14% more than a similar fabric prepared from 12-denier fibers.

The most surprising result of these experiments is the behavior of the group of fabrics prepared from a blend (50% of each, by weight) of 3- and 12-denier fibers. These fabrics are quite similar, under compression, to fabrics consisting of 100% 12-denier fibers, but quite different from the fabric consisting of 100% 3-denier fibers.

ACCELERANT DYEING OF HYDROPHOBIC FIBERS—PRINCIPLES AND MECHANISMS

Piedmont Section

The use of accelerants (termed "carriers") in dyeing of hydrophobic fibers, ie, cellulose triacetate and polyester, with disperse dyes, is critically examined from the standpoint of mechanism and principles. A

mechanism involving action of the carrier molecules within the fiber rather than in the dyebath is proposed.

The dye molecules diffuse through "holes" formed as fiber polymer interchain bonds dissociate under thermal agitation. The carrier is absorbed by the fiber and acts by partially replacing interchain bonds with more easily disrupted fiber-accelerant bonds. With this increased mobility, the number of openings will increase under the same thermal energy content resulting in a more permeable fiber and faster dye diffusion.

Guiding principles for the optimum use of carrier and a more objective insight into the mechanism are derived from basic experiments. Techniques required in the investigation of these new approaches are described for:

1) Solubility of dyes in carriers
2) Quantitative absorption of carriers by fibers
3) Effect of surfactants and liquor ratio on carrier action
4) Desorption of dyes in presence of carrier
5) Effect of carrier pretreatment of fiber on subsequent dyeing rate
6) Effect of carrier on water imbibition
7) Migration of dye from carrier films
8) Physical effects of carrier on fiber

The principles established and the proposed mechanism have been successfully applied to a number of problems and questions confronting the practical dyer.

A STUDY OF THE REMOVAL OF METAL IONS FROM COTTON FABRICS

Rhode Island Section

This paper is a study of the relative efficiencies of four different chelating agent types when applied under various conditions of pH and temperature to cotton cloth of known contamination. The results were determined by quantitative spectrographic analyses of residual ash from cotton fabrics treated by various procedures.

The paper shows that chelating agents are effective in the removal of cations from cotton fabric. However, their efficiencies are affected by various conditions of temperature and pH.

THE CONTINUOUS WET PROCESSING OF COTTON-ACRILAN WORK-CLOTHING FABRICS

South Central Section

Fabrics employed for work-clothing have always had a most strenuous wear life. The introduction of uniform rental establishments with their necessary vigorous cleaning methods have added to this condition.

Cotton has always been the major fiber for these fabrics. Of late, the introduction of synthetic fibers to augment the attributes of natural fibers has yielded improved fabrics in many fields. The blending of cotton with Acrilan in work-clothing fabrics produces the same effect. The physical and chemical properties of these fibers complement each other.

Work-clothing fabrics are volume items and hence must be produced on a continuous basis with relatively low costs. Using conventional cotton processing equipment for preparing, bleaching and dyeing, procedures have been developed to produce fabrics of equal colorfastness to cotton fabrics and improved abrasion, tear resistance and acid resistance.

Because of these improvements financial benefits accrue to both the people using work-clothing of the blend and the uniform rental laundries.

DYEING WITH DIRECT DYES—THE EFFECT OF VARIOUS SALTS

Southeastern Section

The effect of salts other than sodium chloride and sodium sulfate on the dyeing behavior of direct dyes when applied to cotton cloth at a pH of 3 has been determined.

Dyeings with each of nine dyes were carried out for periods of one and five hours in the presence of each of six salts. The salts (chlorides of magnesium, calcium, barium, lead, aluminum and tin) were added to each dyebath at equivalent ionic strengths to facilitate comparisons.

Reflectance data, obtained from the dyed samples with the aid of a spectrophotometer, were used to evaluate the effect of the salts; comparisons with dyeings made in the presence of sodium chloride were also made.

The variability of the effect of any one salt on the dyes used in this work is very marked. Magnesium chloride was similar in its action to sodium chloride except in the case of CI Direct Blue 71. Calcium chloride gave dyebath exhaustions equal to or better than those obtained with sodium chloride with five of the dyes (Red 4, Green 6, Yellow 50, Red 2, Yellow 29) but apparently destroyed the Blue 71. The barium salt gave significantly poor results only with Yellow 12. Lead chloride affected Red 2 and Yellow 12 adversely but had no marked effect on the other dyestuffs. Of the six salts used, aluminum chloride gave the poorest dyeings on the largest number of dyes. Tetravalent tin ions gave dyeings of significantly lower strength than those obtained with common salt only in the case of Yellow 50.

It is not possible, from this work, to make any general statements regarding the effect of salts on direct dyes. No correlations of the effect of the various ions with size, charge, or other physical characteristics have been possible. Apparently the results are determined by both the nature of the dye and the added salt as well as by other factors which have not yet been determined.

"WASH-AND-WEAR" RATINGS: SUBJECTIVE AND OBJECTIVE

Washington Section

Various subjective methods for evaluating the "wash-and-wear" properties of a range of fabrics are compared with each other and with an optical, objective method. The correlation between the various subjective methods was fair. A good correlation was found between the objective and subjective methods. The subjective methods all showed wide variations between raters while the objective method exhibited excellent reproducibility. However, the optical method was influenced by construction and color. Such an objective method appears to be best suited for comparison of various "wash-and-wear" treatments on one fabric, or for quality control in textile finishing.

VISITS TO LOCAL LABORATORIES

Among the Government and private laboratories in the Washington, DC, area which will welcome AATCC members are:

National Institute of Drycleaning
909 Burlington Avenue
Silver Spring, Maryland

Textile Section
National Bureau of Standards
Connecticut Avenue at Van Ness Street
Washington, DC

Harris Research Laboratories
6220 Kansas Avenue, NE
Washington 11, DC

Members interested in touring the Textile Section of the National Bureau of Standards can make arrangements by calling EMerson 2-4040, extension 277.

The Harris Research Laboratories will welcome members on Friday, October 9, from 1:00 to 4:00 PM.

CHAPIN TO RECEIVE FIRST SERVICE AWARD

HAROLD C CHAPIN, past secretary and Honorary Member of AATCC, has been named the initial recipient of the Association's new service award, which has been designated "The Harold C Chapin Service Award." The Award will henceforth be presented annually to a Senior Member, of at least twenty years continuous membership, who has contributed outstanding service in enabling the Association to attain the objectives for which it was founded.

The Award will be made to Dr Chapin by Weldon G Helmus, AATCC president, during the Awards Luncheon to be held Thursday, October 8, during the 1959 Convention in Washington, DC.

Announcement that Dr Chapin would be the first recipient of the new Award was made by Geo O Linberg, chairman of the Committee on Service Award, during the 216th meeting of the AATCC Council on September 11 in New York.

TOP-FLIGHT ENTERTAINMENT SET FOR ANNUAL BANQUET

THE ROGERS

THOSE attending this year's Annual Banquet will be treated to a top-flight program of entertainment, which will feature Maria Neglia, a violinist virtuoso; Prince Hara, one of the most different novelty acts in the business; Earl William, Broadway singing star; Lillian Murphy, singing star of Radio City Music Hall; and The Rogers, one of America's new dance team sensations, who combine artistry with comedy pantomime.

PRINCE HARA

EARL WILLIAM

MARIA NEGLIA

LILLIAN MURPHY

Elected Members

No designation after name indicates Senior
(A) indicates Associate
(J) indicates Junior
(S) indicates Student
*indicates transfer from another class of membership

August 27, 1959

NEW ENGLAND REGION

RHODE ISLAND SECTION

Leonard G Alves*
Thomas A Brown*
Arthur W Godfrey Jr*
Anthony P Vellucci*

CENTRAL ATLANTIC REGION

METROPOLITAN SECTION

Torben E Neesby
Robert L Harte (J)

SOUTHERN REGION

PIEDMONT SECTION

James E Gregson
Everett C Eldredge (A)
Daniel D Ward*
Alan D Grover*

SOUTHEASTERN SECTION

Fred E Royal
Florine K Rasch (A)

WESTERN REGION

MID-WEST SECTION

Joseph A Roux*

PACIFIC SOUTHWEST SECTION

James S Martin

September 10, 1959

NEW ENGLAND REGION

NORTHERN NEW ENGLAND SECTION

Herbert Glassman
Charles S Letcher (A)

RHODE ISLAND SECTION

John V Simonian

CENTRAL ATLANTIC REGION

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Alvin J Kieft
Max Presser

UNCLASSIFIED

Elmar B O Limpach
John E G Walsh

Membership Applications

NEW ENGLAND REGION

WESTERN NEW ENGLAND SECTION

Senior

William M Russell—Chemist Resin finishing, Chicopee Mfg Corp, Chicopee Falls, Mass. Sponsors: J W Byam, S A Simon.

CENTRAL ATLANTIC REGION

METROPOLITAN SECTION

Senior

Hector W Griswold—Supv, nonwoven prod dev, Chicopee Mfg Corp, Milltown, NJ. Sponsors: A D Nacht, W S Banard.

Arthur T Schramm—Mgr, field sales, National Aniline Div, Allied Chem Corp, New York, NY. Sponsors: W A Holst, J E Loughlin.

Associate

Robert W Rimmer—Chemist, E I duPont de Nemours & Co, Inc, Jackson Lab, Chambers Wks, Deepwater, NJ.

DELAWARE VALLEY SECTION

Associate

Donald H Loeber—Office mgr, W F Fancourt Co, Philadelphia, Pa.

SOUTHERN REGION

SOUTHEASTERN SECTION

Senior

Richard L Meek—Head chemical res, Scripto, Inc, Atlanta, Ga. Sponsors: H G Smith, W E Fayssoux.

WESTERN REGION

MID-WEST SECTION

Senior

Paul A Majors—Dir of Labs, Hill Top Research Institute Inc, Miamiville, Ohio. Sponsors: A S Davis, R D Giggins.

Harlan T Fallstad—Research chemist, Archer Daniels Midland Co, Minneapolis, Minn. Sponsors: L J Armstrong, H C Speel.

PACIFIC NORTHWEST SECTION

Associate

Martin W Nill—Tech engr, Longview Fibre Co, Longview, Wash.

PACIFIC SOUTHWEST SECTION

Senior

Louis F Payette—Production control, Catalina Inc, Whittier, Calif. Sponsors: W E Kramer, H K Vogel.

AATCC Calendar

COUNCIL, COUNCIL COMMITTEES, RESEARCH COMMITTEES
Nov 19-20 (Hotel McAlpin, New York, NY); Nov 19—Council Committees and Research Committees; Nov 20 (AM)—ECR, TCR; Nov 20 (PM)—Council

NATIONAL CONVENTIONS
Oct 7-10, 1959 (Sheraton Park and Shoreham Hotels, Washington, DC); Oct 6-8, 1960 (Sheraton Hotel, Philadelphia, Pa); September 28-30, 1961 (Buffalo, NY); 1962 (Southern Region)

DELAWARE VALLEY SECTION
Sept 25 (Hotel Abraham Lincoln, Reading, Pa); Oct 23 (Kugler's Restaurant, Philadelphia, Pa); Dec 4 (Philadelphia, Pa)

HUDSON-MOHAWK SECTION
Oct 2, Nov 20 (Jack's Restaurant, Albany, NY); Jan 15, Mar 27 (Chelsea House, Tribes Hill, NY); May 20 (Ladies Night); June 24 (Annual Outing)

METROPOLITAN SECTION
Oct 16, Nov 20 (Kohler's Swiss Chalet, Rochelle Park, NJ); Jan 15, Feb 19 (Hotel New Yorker, New York, NY); Mar 18, Apr 22 (Swiss Chalet); May 20 (Ladies Night—Swiss Chalet); June 1960 (Outing)

MID-WEST SECTION
Nov 7 (Bismarck Hotel, Chicago, Ill)

NIAGARA FRONTIER SECTION
Sept 25 (Niagara Falls, Ont, Canada); Dec 11 (Annual business meeting, Buffalo, NY)

NORTHERN NEW ENGLAND SECTION
Sept 25 (Outing—Wachusett Country Club, West Boylston, Mass); Oct 16 (Lexington Inn, Lexington, Mass); Dec 4 (Joint symposium with ASME Textile Engineering Div, Smith House, Cambridge, Mass); Jan 15 (Woodlawn Golf Club, Newton, Mass)

PIEDMONT SECTION
Sept 25-26 (Barringer Hotel, Charlotte, NC); Jan 22-23 (Poinsett Hotel, Greenville, SC); April 2-3 (Hotel Robert E Lee, Winston-Salem, NC); June 3-4 (Outing—Ocean Forest Hotel, Myrtle Beach, SC); Sept 23-24, 1960 (Hotel Charlotte, Charlotte, NC)

RHODE ISLAND SECTION
Dec 4 (Annual Meeting—Johnson's Hummocks Grille, Providence, RI); Jan 29 (Johnson's Hummocks); Mar 25 (Providence Engineering Soc); April 29 (Student Night); June 24 (Outing—Metacomet Country Club; Sept 23, 1960 (Management Night); Oct 28, 1960 (Providence Engineering Society); Dec 2, 1960 (Annual Meeting—Johnson's Hummocks)

SOUTHEASTERN SECTION
Dec 5 (Atlanta Athletic Club, Atlanta, Ga)

WESTERN NEW ENGLAND SECTION
Sept 25 (Blake's Restaurant, Springfield, Mass); Oct 23 (Annual Meeting—Rapp's Restaurant, Shelton, Conn); Dec 4 (Hartford, Conn)

AATCC Research———

ABRASION RESISTANCE OF FABRICS: EVALUATION OF WEAR BY MEANS OF THE ACCELEROTOR

AATCC COMMITTEE ON RESISTANCE TO ABRASION

COMMITTEE RA29
N B Gobeil, *Chairman*
M W Winkler, *Secretary*
A G Balfrey
H Bultman
T F Cooke
P J Fynn
J W Kirby
A A Lowe
N A Matlin
J P McNally
D H Patt
J J Press
N H Sherwood
D Shieldkret
C L Simon
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A rapid test which utilizes the AATCC Accelerotor for evaluating the resistance of fabrics to abrasion is presented.

This tentative test method was developed on the basis of a carefully planned and executed interlaboratory test for reproducibility, as well as the experience and data developed by the AATCC Research Laboratories and by individual Committee members. Reference is made to the article, "Abrasion Testing of Textiles with the Accelerotor—Reproducibility in Interlaboratory Tests," which appeared on pages P679-83 of the October 6, 1958 issue of the *American Dyestuff Reporter*.

Evaluation is made on the basis of weight loss of the specimen, or change in other characteristics, such as strength, air permeability, light transmission, visual appearance, hand, etc depending on the type of fabric and its intended end use.

ABRASION RESISTANCE OF FABRICS: EVALUATION OF WEAR BY MEANS OF THE ACCELEROTOR

*Tentative Test Method**
93—1959

PURPOSE AND SCOPE———This test is intended for evaluating the resistance of fabrics and other flexible materials to abrasion.

PRINCIPLE ——— An unfettered fabric specimen is driven by an impeller (rotor) in a random path of movement such that it repeatedly impinges the walls and abradant liner within a chamber along a zigzag course in a generally circular orbit, while at the same time being continuously subjected to extremely rapid, high-velocity impacts. The specimen is subjected to flexing, rubbing, shock, compression, stretching, and other forces during the test. Thus frictional abrasion is produced throughout the body of the cloth by rubbing of yarn against yarn and fiber against fiber as well as by rubbing of surface against surface and surface against abradant.

Evaluation is made on the basis of weight loss of the specimen, or change in other characteristics such as strength, air permeability, light transmission, visual appearance, hand, etc depending on the type of fabric and its intended end use.

*Adopted as Tentative, 1959.

APPARATUS AND MATERIALS

Accelerotor (Fig 1) (*1*).

Rotor, offset (elongated S-shape), 4½" (Fig 2) (*1, 7*).

Collar insert, plastic, lined with ⅛" polyurethane foam (*1*).

Liner, abrasive, No. 250 (*1*).

Neon lamp or other stroboscopic device (*2*).

Timer, automatic (*3*).

Adhesives (*1, 4*).

Tape, coated one side (Permacel P-691) (*1*).

Tape, coated both sides (Permacel P-50) (*1, 7*).

Brush, nylon (*1*).

TEST SPECIMENS———A minimum of three replicates is desirable.

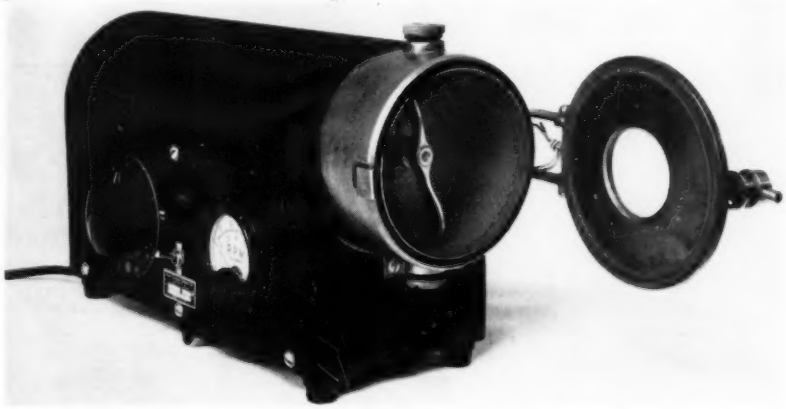

Figure 1
Accelerotor fitted with abrasive liner over foam rubber cushion and with 4½" S-shape rotor

Size of Specimens. Specimens of heavier or bulkier fabrics should be cut smaller than those of lighter fabrics. The following table is a guide to the relationship between fabric weight, in ounces per square yard, and specimen size.

Weight range of flat fabrics (oz/sq yd)	*Size of specimens*
9-12	3¾″ x 3¾″
6- 9	4½″ x 4½″
3- 6	5¼″ x 5¼″
less than 3	6 ″ x 6 ″

Preparation of Specimens (5). Cut a specimen with pinking shears. Place it on paper (to protect bench top) and apply a thin coating of adhesive to each pinked edge (*4*). Allow the adhesive to dry at room temperature.

Condition the specimen at 65 ± 2% rh and 70 ± 2°F (21 ± 1°C) for at least four hours.

ADJUSTMENT OF TACHOMETER——Check the accuracy of the tachometer with a neon lamp or stroboscope (2).

Neon Lamp. The neon lamp is used as a simple stroboscope to view the spinning rotor. With the test chamber door closed (*6*) and the neon bulb held close to the window of the door, the rotor gives distinct patterns at several useful speeds. With very little practice, the following patterns will be recognized:

1800 rpm—The rotor appears as a stationary distinct two-bladed figure.

3600 rpm—The hub of the rotor appears as a stationary blur with two slight lobes apparent on the sides of the hub.

(If the power supply is 50 cycle alternating current, the test patterns will appear at 1500 and 3000 rpm respectively.)

PREPARATION OF LINERS——

Installation of Liners. Fit a 16½″

Figure 2
Elongated S-shape rotor

strip of No. 250 abrasive liner *snugly* inside the foam-lined collar. This results in about ½″ overlap. Draw a line along the overlap edge and trim to form a close butt. Join the butt ends by pressing a 2¾″ x 1″ piece of single-face tape (Permacel P-691) along the underside of the butt. Replace the liner and fasten it to the collar by means of a 1″ x ½″ tab of single-face tape, at each end of the butt (the tape beginning from ¼″ in on the abrasive liner face and lapping over the edge to the underside of the collar as illustrated in Fig 3).

Break-in of Fresh Liner. Insert the prepared collar into the Accelerotor equipped with the selected rotor. Break in the abrasive liner by running a 4½″ x 4½″ specimen of 80 x 80 finish-free cotton, edged with adhesive (*4*). *Close the door (6)*, start the Accelerotor and maintain speed at 3000 rpm for 12 minutes. Stop the Accelerotor, open the door and remove the specimen. Brush the abrasive liner to remove detritus (*8*).

PROCEDURE——

Weight Loss Method.

1) Weigh the specimen on an analytical balance to ±0.001 gram.

2) Crumple the test specimen and place it in the path of the rotor.

3) *Close the door (6)*, start the Accelerotor and maintain accurately at a selected speed for the desired time (*7*).

4) Stop the Accelerotor, open the door and remove the test specimen.

5) Brush the liner to remove detritus.

6) Shake the specimen free of detritus.

7) Condition the tested specimen at 65 ± 2% rh and 70 ± 2°F (21 ± 1°C) for at least four hours.

8) Reweigh the specimen on an analytical balance to ± 0.001 gram.

EVALUATION——

Weight Loss Method (10). Calculate the percent loss in weight for each specimen to ±0.1%. Report the average of the replicates as the percent weight loss of the fabric.

Additional Tests. Additional evaluation of worn specimens may be made by conventional tests, such as strength, air permeability, light transmission, thickness, visual appearance, hand, stiffness, etc.

REPORT——The report must state the exact conditions employed, ie, speed, time, size and type of rotor, and type of liner.

NOTES

(1) For procurement write to Atlas Electric Devices Co, 4114 North Ravenswood Avenue, Chicago 13, Illinois.

(2) The Neon Lamp Speed Tester Assembly is presently included with the Accelerotor accessories supplied by the Atlas Electric Devices Company. This item consists of a neon lamp, socket and cord set for use on 115-volt, 60-cycle current for checking the accuracy of the tachometer.

Stroboscope—If a stroboscope is used, set its dial at 3000 rpm. *Close the door (6)*. Start the Accelerotor and bring the speed of the rotor to 3000 rpm, at which point the rotor appears as a stationary, two-bladed figure. If the tachometer does not now read 3000 rpm, turn the small screw on the dial face to correct it.

(3) The use of an electric timer which will automatically start and stop the Accelerotor is recommended. Such a timer should be accurate to ± 1 second after calibration.

(4) Vulcanol AL-100-5S has been used successfully with a wide range of fabrics. It is applied as a thin coating to pinked edges of specimens by means of a small brush, glass rod or medicine dropper (See Figure 4).

If, in unusual cases, certain fabrics cannot be pinked satisfactorily or edged satisfactorily with Vulcanol, ravelling the specimens about ⅛″ along each edge and applying a thin ribbon of Ubabond H-511 adhesive from a plastic squeeze bottle and causing it to penetrate the ravelled portion with a small stiff brush or other convenient device may be resorted to. (See Figure 5).

(5) It is convenient to mark specimens for cutting by means of square templates made of metal, plastic or cardboard. If available, cutting dies of

Figure 3
Securing abrasive liner to foam-lined collar

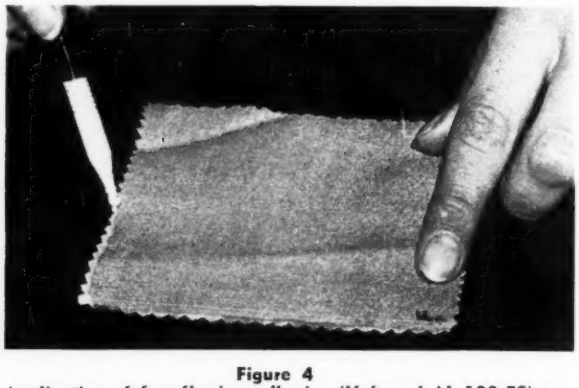

Figure 4
Application of free-flowing adhesive (Vulcanol AL-100-5S) to pinked edge of a specimen from a medicine dropper

Figure 5
Application of adhesive (Ubabond H-511) to ravelled edges of specimen from a plastic squeeze bottle (see Note 4)

appropriate dimensions may also be used; however, dyed specimens should be ravelled prior to the edge sealing (Note 4 above).

(6) For safety, the door of the Accelerotor must be kept closed whenever the motor is running.

(7) The time of test may be varied according to the type of fabric being tested. For example, delicate or fragile fabrics may require only two or three minutes at 3000 rpm to provide a reasonable degree of wear for comparative evaluation. On the other hand, heavier or more durable fabrics may require 12 or more minutes at 3000 rpm.

Other variations that may be used are increased or decreased speed and the use of a shorter (4¼") offset S-shape rotor. For special applications, pitched-blade rotors (4¼", 4½" and 4¾"); and no-grit (¼" neoprene sponge) or No. 180 grit liners are available. The No. 180 grit liner is installed the same way as the No. 250 grit liner. These factors of speed, time, size and type of rotor are interrelated and may be varied to meet the needs of a particular series of tests.

If frictional abrasion (no-grit) is desired, the chamber of the Accelerotor may be lined with a neoprene sponge liner. (No collar insert is needed.) To secure this liner to the chamber, place a piece of double-face tape (Permacel No. P-50) between the butt and the chamber wall. No break-in of this type liner is necessary.

The exact conditions employed, ie, speed, time, size and type of rotor and type of liner, must be recorded and reported with the test results.

(8) The effective life of a liner may be checked by running a control fabric, such as 80 x 80 cotton, for weight loss at the beginning of a series of tests and after intervals of five or six test specimen runs. The liners may be rejuvenated to a considerable degree by scrubbing them on a flat surface with a stiff floor brush and soapy water followed by rinsing and thoroughly drying before using again.

(9) For greater reproducibility, it is recommended that, after six test specimens have been run, the collar assembly be removed and placed back in the Accelerotor chamber in the reverse direction, so that the front rim goes to the back of the chamber. This makes available fresher, less worn abrasive surface for six additional tests. It is further recommended that an abrasive liner be discarded after a total of 12 specimens are tested, since all abrasives eventually lose effectiveness due to clogging. (If the liner has not been subjected to severe duty, it may be used for more tests.) For greater reproducibility of tests results, randomization of samples is recommended.

(10) For additional information see:

"Abrasion Testing with the Accelerotor—Reproducibility In Interlaboratory Tests," *Am Dyestuff Reptr 47*, No. 20, 679-83 (1958).

"The Accelerotor for Abrasion Testing and Other Purposes," *ibid 45*, No. 19, 685-700 (1956).

ANALYSIS OF FINISH IN TEXTILES

AATCC COMMITTEE ON IDENTIFICATION OF FINISHES ON TEXTILES

ANALYSIS OF FINISH IN TEXTILES

Tentative Test Method
94-1959*

PURPOSE AND SCOPE——This method makes it possible to distinguish the chemical classification of finishing materials present in textiles.

Textile material of known construction and category of commercial finish is tested to classify the general type of chemical treatment which has been applied. A test for all possible substances which may be present without knowledge of the fiber content, textile structure, and properties which distinguish the textile from a similar unfinished textile is not intended, nor are the methods intended to be suitable for employment by untrained and inexperienced personnel. The following finish categories, which may overlap, with appropriate existing tests for recognition are listed:

1) Adhesive, abrasion - resisting, binder, coating, size, slipproof, stiffener, snag-resisting, nonlinting.

Determination of the Noncotton Content of Bleached Woven Cotton Cloth, AATCC Method 80—1954T**.

Evaluation of Snag Resistance of Women's Nylon Hosiery, AATCC 65—1957T.

Evaluation of Wear by Means of the Accelerotor, AATCC 93—1959T.

Tests for Abrasion-Resistance of Textile Fabrics, ASTM D 1175-55T.

Test for Yarn Distortion in Woven Fabrics, ASTM D 1336-45T.

2) Antiseptic, deodorant, fungicide, germicide, mildewproof, sanitizer.

Resistance of Textiles to Mildew and Rot, and Evaluation of Textile Fungicides, AATCC 30—1957T.

Detection of Antibacterial Property of Fabrics: Agar Plate Method, AATCC 90—1958T.

* Adopted as Tentative 1959.

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The interest in methods for identifying finishes has prompted this test method which outlines the 11 categories of finish that will eventually be covered by analytical methods, and provides detailed identification methods for two of these categories — water-repellent finishes and wrinkle-resistant finishes.

The cooperation of the ASTM Task Group on Identification of Finishes (of ASTM Subcommittee B1 on Chemical and Performance Test Methods) under the chairmanship of H B Goldstein is gratefully acknowledged.

B Norwick, *Past Chairman*

** To shorten the list, T is placed after the number of an AATCC method in the lists to signify that it is a Tentative Test Method; S to signify that it is a Standard Test Method.

3) Antistatic.

Determination of Electrical Resistivity of Fabric, AATCC 76—1959S.

Determination of the Electrical Resistivity of Yarn, AATCC 84—1955T.

4) Wrinkle-resisting.

Evaluation of the Wrinkle Recovery of Fabric by Means of Roller Pressure Crease Tester, AATCC 67—1957T.

Evaluation of the Wrinkle Recovery of Fabric by Means of the Wrinkle Recovery Tester, AATCC 66—1956T.

5) Delustering, lustering.

6) Fire-resisting.

Evaluation of Fire-Resistant Textiles, AATCC 34—1952S.

Flammability of Clothing Textiles, AATCC 33—1957S.

7) Loader, weighter, soil-resisting.

Determining the Ash Content of Bleached Woven Cotton Cloth, AATCC 78—1954T.

Determining the Noncotton Content of Bleached Woven Cotton Cloth, AATCC 80—1954T.

8) Lubricant, plasticizer, softener, scroop, sewability.

Proposed Method of Test for Evaluation of Properties Relative to Hand of Soft Woven Finished Fabrics, Appendix 5, ASTM.

9) Mothproofer, insecticide.

Resistance of Textiles to Insects, AATCC 24—1952S.

Evaluation of Insect Pest Deterrents on Textiles, AATCC 28—1952S.

10) Shrink-resisting, antifelting.

Damage Caused by Retained Chlorine AATCC 92—1958T.

Dimensional Changes in Woven Textiles (Excluding Wool), AATCC 91—1958T.

Shrinkage of Wool Hose, Accelerated Test, AATCC 73—1953T.

Dimensional Changes in Wool Textiles, Accelerated Test, AATCC 41—1952T.

Relaxation and Felting Shrinkage of Wool Knit Fabrics, AATCC 74—1953T.

11) Water-resisting, splash- and spot-resisting, oil-resisting.

Resistance to Water Penetration (Hydrostatic Pressure Test), AATCC 18—1952S.

Resistance to Wetting (Dynamic Immersion Absorption Test), AATCC 70—1952T; and Resistance to Wetting (Alternative Dynamic Immersion Absorption Test) AATCC 70A—1958T.

Resistance to Wetting (Static Immersion Absorption Test), AATCC 21—1957S.

Resistance to Water Penetration (Rain Test), AATCC 35—1952S.

Resistance to Wetting (Spray Test), AATCC 22—1952S.

In a majority of cases, it will not be necessary to carry out all of these tests in order to recognize the presence and especially the absence of specific finish categories. Additional finishes which may not be associated with chemicals left in the fabric can also be recognized by physical examination. The following is a check list of these finishes:

Beetling
Button breaking
Brushing, napping
Compressive shrinking
Calendering, embossing, schreinering
Decatizing
Devoré or burnt out
Fulled
Heat set
Mercerized
Moiré
Pill-resistant
Pleated
Polished, glazed
Seersucker
Singed
Sheared
Sponged
Transparentized, organdie, opalescent

Dyestuffs and dye materials such as fixing agents, mordants, optical bleaches, resin-bonded pigments, and gas-fading inhibitors may be removed in the course of finish analysis and can be recognized by appropriate tests.

GENERAL PROCEDURE——A 10-gram sample is taken for multiple quantitative extraction. The quantitative approach to qualitative finish analysis is necessary because of the sensitivity of some tests, the insensitivity of others, and because the amounts present in the fabric are a major source of qualitative information. Generally an intentional finish is associated with at least 0.25% of material, but this is not always the case, as with some germicidal treatments; nor is it always possible to remove 100% of the applied finish.

Solvent extraction may be conducted automatically with a Soxhlet system, or by the use of a beaker method. In the latter case, a minimum amount of solvent is boiled with the sample, decanted, and replaced with fresh solvent. This is repeated until all visible extraction ceases, or after four to six changes. The decanted solvent is boiled off or evaporated in a weighed vessel. Small aluminum weighing dishes are suitable for solvent evaporation. These operations should be carried out under a hood or other well-ventilated conditions. With flammable, poisonous, and explosive solvents, adequate precautions must be taken.

Aqueous and acid extractions and evaporation of these extractions should be carried out in glass equipment. The sample is placed in a minimum of 20 times its weight of distilled water or 0.1 *N* HCl and brought to a boil. The sample should be kept at a light simmer for 15 minutes. With water this operation is repeated twice. Only a single acid bath is used, followed by water extractions, which are added to the acid extract.

If loose fibers, mineral loaders, or delusterants contaminate the solvent or aqueous extractions, these should be centrifuged before evaporation and the centrifugate examined separately.

EXTRACTIONS IN ORDER OF APPLICATION

Trichloroethylene

Natural and Synthetic Waxes and Oils
- fatty amides
- fatty esters
- paraffin

Natural and Synthetic Resins
- ethylcellulose
- polyacrylates
- polyethylene
- polystyrene
- polyvinylacetate
- rosin derivatives
- unset silicones

Polyacrylates and polyethylene are not normally listed as being soluble in trichloroethylene; however, where these materials are present as discontinuous films or in fabric finishes, they usually will be extracted completely by repeated boiling with this solvent. Once the extract has been dried to form a continuous film, redissolving may no longer be as readily accomplished.

Ethanol (Formula 3-A)

Fatty Derivatives
- cationic softeners
- soaps
- sulfated fats, oils, alcohols

Glycerol, Glycols
Phenol, Cresol, Salicylanilide
Urea, Melamine
Sodium Organic Salts
- acetate
- benzoate

Resins
- cellulose nitrate
- some nylon-type resins and traces of nylon breakdown products
- shellac
- rosin derivatives
- sucrose octaacetate

Certain of the above materials have a limited solubility in alcohol, but under the conditions of repeated extraction are completely removed from the fabric.

Acetone

Alkyd Resins
Cellulose Acetate
Chlorinated Rubber
Polyvinyl Chloride

This extraction is not normally carried out with textiles of cellulose acetate fiber.

Water

Carbohydrates
- cellulose derivatives (carboxymethyl cellulose)
- natural gums (arabic, karaya, guar, ghatti, agar)
- polyvinyl alcohol
- starches (potato, rice, corn, wheat)
- sugars (dextrose, sucrose)

Proteins
- albumen
- casein
- gelatin, glue
- soy protein

Amino Aldehyde Resins (unset, surface-cured, or readily hydrolyzed)
Inorganic Salts
- cations
  - ammonium
  - calcium
  - magnesium
  - potassium
  - sodium
  - zinc
- anions
  - borate
  - carbonate
  - chloride
  - fluoride
  - nitrate
  - phosphate
  - sulfamate
  - sulfate

Centrifugable Solids
- clay, bentonite
- silica, diatomaceous earth
- titanium dioxide

0.1 N Hydrochloric Acid

Amino Aldehydes
- formaldehyde combinations with:
  - casein
  - cyclic ethylene urea
  - melamine
  - thiourea
  - urea
- combinations of the above with carbohydrates and proteins.

Inorganic Salts (usually in the form of centrifugable solids)
- antimony
- tin
- titanium
- zirconium

Ashing

Inorganics
- All mentioned, plus the following:
  - barium
  - chromium
  - copper
  - iron
  - lead
  - manganese

Each extract is likely to be contaminated with substances not specifically finishes, such as natural cotton wax, nylon breakdown products, traces of cellulose acetate, brittle Dacron fiber particles, fibers, "dirt" and soil, dyestuff, optical bleaches, dye assistants, detergent residues, water-borne solids, and in some cases by material put into the textile prior to its finishing operation, such as yarn lubricants and warp sizings. The latter, unless their location in the fabric is noted, will be reported as finish. The more precise the identification desired, the more likely it is that purification of each extract will be necessary. Details of these operations are given in the methods for each finish category. In some cases, solution does not occur, but adhesion to the textile is reduced to such an extent that the substance is removed.

CATEGORY 4— WRINKLE RESISTING

PRINCIPLE——The finish is first classified as wrinkle resisting by the use of the wrinkle recovery test, AATCC 66—1956T, even if it has been recognized as such by handle or resiliency. The analyst must note the construction and whether the textile contains wool, Dacron, nylon, or other fibers, as recovery level is a function of fibers and construction as well as finish. In principle it is only possible to decide if the material has a wrinkle-resisting finish by comparison with a known sample. In most cases the fabric will be dyed, so that staining tests directly on the fabric are of limited utility. The sensitive qualitative tests for formaldehyde give positive results in many cases where wrinkle-resisting treatments have not been applied, so that a quantitative formaldehyde test is recommended. A mixture of the various amino finishes is so likely to be encountered that a chromatographic separation *(1)* is recommended for use where such a detail is desired. Examination of the infrared spectra of the resin extract is also recommended.

After the general procedure has been carried out as far as the water extraction, further classification into three maior groups is possible by the use of a chlorine damage test, AATCC 92—1958T, a chlorine retention test using orthotoluidine hydrochloride, and by the use of a Kjeldahl test on the acid extract.

PROCEDURE —— A 10-gram sample is extracted as in the general procedure and after each extraction, a wrinkle-recovery test is made. A face and back effect in a plain weave indicates curing on one face. A small drop in wrinkle recovery after solvent extraction indicates loss of lubricant, while a small rise indicates loss of surface resin or adhesive. The finish is classified into Groups A and B nitrogenous) or Group C (nonnitrogenous) by a Kjeldahl test on the acid extract, or by a chlorine-retention test on the fabric after extractions including water extraction.

Group A—Positive chlorine retention, chlorine damage, Kjeldahl nitrogen:

urea-formaldehyde, methylated urea-formaldehyde
melamine-formaldehyde, methylated melamine-formaldehyde
acetylene diurea
cyclic ethylene urea

Amino aldehydes. A urea base is indicated by a large, nitrogenous water extract; formation of a urea nitrate precipitate in 10% solids solution of the acid extract; evolution of ammonia when the acid extract is heated with caustic; a significant drop in wrinkle recovery after the water extraction; characteristic infrared spectra; and by paper chromatography in the case of doubtful tests. Melamine is indicated by the formation of melamine picrate precipitate with a purified (centrifuged) acid extract; by a solid, nonhygroscopic or sticky, acid extract; by a

slow rate for formaldehyde evolution, which may not be complete even at the end of a 15-minute acid boil; and by a light pinkish color with phenyl hydrazine and ferric chloride reagents (as contrasted with red or dark brown with other amino bases). In doubtful cases, paper chromatography can be employed. The cyclic ethylene urea can be recognized by its rapid acid hydrolysis, sticky acid extract, characteristic infrared spectrum, and in doubtful cases by paper chromatography. If it is desired to know if the methylated resin is present, a phenyl hydrazine and ferric chloride test will produce greenish colors with the methylated ureas. Another check can be carried out by acid hydrolysis of the sample in a reflux system, followed by careful distillation and a test of the first drops of the distillate for methanol. For this test a 10-gram sample is sometimes inadequate because of the insensitivity of the xanthate test method. Other amino type materials may be present, and the absence of the above mentioned materials, the abnormal infrared spectra and chromatographic separation will indicate the necessity for additional testing.

Group B—Positive chlorine retention and Kjeldahl nitrogen, no chlorine damage†:
substituted heterocyclic resins
epoxy reactant plus melamine- or ethylene-urea

Group C—Negative chlorine retention and Kjeldahl nitrogen:
formaldehyde, formaldehyde with carbohydrate film formers, formaldehyde acetone
acetal reactant
epoxy reactant

Nonnitrogenous. These finishes can be divided into two groups by a quantitative formaldehyde test, or by the crease resistance after acid hydrolysis into nonhydrolyzable and hydrolyzable (formaldehyde-based) finish. The nonhydrolyzable epoxy and acetal finishes may be separated on the basis of the catalyst systems used for these two types. The epoxy finish will show fluoride in the ash and will normally have a low percentage of water extractables. The acetal finish will show zinc nitrate or magnesium chloride in the water extract, and in normally high percentages, along with a small percentage of formaldehyde. Ketone-aldehyde finish will yellow on heating.

† Cyclic ethylene-urea and melamine-formaldehyde resins cured with buffering catalysts (such as magnesium chloride) show no chlorine damage initially, but do after the equivalent of five washings following the procedure outlined in AATCC 91—1958T, Test No. IV.

REFERENCE———

Useful Infrared Spectra
urea
melamine
acid extracts
urea-formaldehyde
melamine-formaldehyde
cyclic ethylene urea-formaldehyde
magnesium chloride
zinc nitrate

Analytical Methods (2, 3)
Soxhlet extraction
micro Kjeldahl
infrared spectrophotometer
paper chromatography
xanthate test for methanol
picrate test for melamine
nitrate test for urea
quantitative test for formaldehyde
qualitative test for formaldehyde
qualitative test for magnesium, zinc, acetate, nitrate, chloride, fluoride, borate

CATEGORY 11—WATER RESISTING, SPLASH AND SPOT RESISTING, OIL RESISTING

PRINCIPLE———The finish is first classified by the use of the spray-test, AATCC 22—1952S, before and after a No. II wash test, AATCC 36—1957S, as durable or nondurable. The pH of this wash must not be over 10 or silicone finish may be attacked. After washing, thorough rinsing should be given as surface-active materials may mask water-resisting finish. With fabrics composed largely of hydrophobic fibers, a drycleaning test, AATCC 85—1957T also should be carried out, as some nondurable water-repellent finishes on such fibers resist one washing. After classification, the fabric is quantitatively extracted with chlorinated solvent to remove water-repellent material if possible, and this extract is tested for chemical material. In some cases the water repellent will not be extracted, and other tests will be carried out on the fabric. Water extraction may be employed to determine emulsifiers and suspending agents, and ash tests will indicate aluminum, zirconium, lead, tin, zinc, and chromium, in addition to silica, which may be present.

PROCEDURE ——— After determination of the durable or nondurable nature of the finish, approximately 10 grams of weighed fabric are extracted with hot trichlorethylene If the fabric is intentionally waterproofed, this extract should amount to approximately 1.0% or more of the fabric weight in most instances. With certain hydrophobic fibers and well-cured silicone finishes this percent of extract may drop below 0.5%. In this case, it is sometimes advisable to use a larger sample so as to obtain workable quantities of the material. The extract is placed in a small aluminum dish and boiled with petroleum ether. After cooling, the petroleum ether-soluble material can be separated from the insoluble material. The melting point of the insoluble material is determined by the use of a Fisher-Johns apparatus. The percent of nitrogen is determined by micro-Kjeldahl. Both extracts are checked for infrared spectra against known samples. The extract may also be ashed and the percent of residue determined; the percent of silica in the ash should also be checked by hydrofluoric acid.

EVALUATION———

Nondurable Repellents. Aluminum or zirconium or both may be present. Paraffin (mp below 60°C. sp gr below 0.94), natural and synthetic waxes may be used and these will have a wide variety of melting points. The infrared spectra of these waxes will often indicate approximate chemical nature (ester). Glue and casein are sometimes detectable in hot water extract subsequent to trichlorethylene extraction. The ash may be highly colored and give a positive test for chromium in European finishes. In this case a drop of olive oil is placed on the original fabric. If the olive oil does not penetrate the fabric, an indication of an oil-resisting finish is given. At the present time these finishes have a single commercial source, are based on organic fluorides, and constitute a single classification. If oil penetrates, a Quilon-type fatty chromium complex is indicated.

Durable Repellents—Silicone Type. Silicone will be high in the trichlorethylene extract. Infrared spectrum characteristic. A direct test for silicone can be carried out on a single thread of the extracted fabric if the other tests are negative, as may occur with a well-cured silicone which will not be extracted by trichlorethylene. A thread from the fabric is wetted under a cover glass with 5% sodium hydroxide on a microscope slide. In the case of the silicone finish, the evolution of small bubbles will be seen. The extracted fabric in cases where no silicone has been found in the extract may be ashed and the percent of silica in the ash determined. This may indicate the presence of colloidal silica in the

finish or silicates in bleaching or other processing. If the fabric is oxidized using the wet perchloric acid method, the presence of the silica will be noted, and the same comments apply. If no silicone is detected by infrared or by the evolution of bubbles with caustic, the presence of silica is not to be taken as an indication of a silicone finish. Where a silicone water repellent has been used, the ash normally will contain lead, tin, or zinc catalysts.

Stearamidomethyl pyridinium chloride type (eg, Zelan). Nitrogen over 3% in trichlorethylene extract. Melting point of re-extract over 70°C, may reach 130°C. The infrared spectrum is characteristic and resembles that of stearamid type of water-repellent finishes.

Methylated methylol melamine-stearamide emulsion type (eg, Permel). The fabric will normally show high crease resistance, and 0.1*N* acid extract and other methods as described in the method for crease-resistant finishes will indicate the presence of melamine in Permel and other amino-aldehyde types in similar types. The trichlorethylene re-extract will have a melting point over 70°C, and its infrared spectrum will resemble that for Zelan. The percent of nitrogen in the re-extract will be over 3%.

Stearoxymethyl pyridinium chloride type (eg, Norane R). This type of finish will show a re-extract with a melting point over 50°C, with a low nitrogen under 2%. Its infrared spectrum is also characteristic.

PRECAUTIONS —— Occasionally fabrics which have not been intentionally waterproofed will show an initial high water repellency. In addition to the fact that these unintentional or accidental water repellents have extremely low percents of trichlorethylene extracts, calcium in the ash may be high, a paraffin finish without aluminum or vice-versa may be present, and amino aldehyde may be associated with small amounts of fatty softeners which have been coupled to the cellulose. Normally these will not be above 70 on the spray test and the percent of active waterproof substances will be abnormally low. New, foreign or experimental finishes may be encountered, but their behavior to extraction and the infrared spectrum will indicate these abnormal types.

REFERENCE——

Useful Infrared Spectra
- Paraffin
- Methyl hydrogen silicone
- Stearamid
- Norane

Analytical Methods (2, 3)
- Soxhlet extraction
- micro-Kjeldahl
- perchloric acid oxidation
- melting point
- infrared spectra
- qualitative tests for aluminum, zirconium, lead, tin, zinc, chromium, calcium

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DIMENSIONAL RESTORABILITY OF WOVEN TEXTILES AFTER LAUNDERING

AATCC COMMITTEE ON DIMENSIONAL CHANGES IN TEXTILE FABRICS

DIMENSIONAL RESTORABILITY OF WOVEN TEXTILES AFTER LAUNDERING

Tentative Test Method 95—1959*

PURPOSE AND SCOPE —— This method is intended for determining the dimensional restorability of woven fabrics which are restored by hand ironing or wearing after laundering.

PRINCIPLE——A marked specimen which has been laundered, flat-bed pressed and measured to determine dimensional change is re-wet and pressed under tension until dry. The dry, relaxed specimen is measured and the dimensional change is calculated and reported in per cent.

*Adopted as Tentative 1959.

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Dimensional restorability has been defined by the Committee as the maximum amount of stable change that can be induced by stretching or wearing a fabric measured on the basis of that fabric when washed and flat-bed pressed.

This test method is intended for determining the dimensional restorability of woven textiles which are restored in practice by hand ironing or wearing after laundering. It utilizes the Tension Presser as the test instrument.

The development of this tentative test method is the result of several series of interlaboratory tests and the writing of several drafts of the method. In addition, the experience of several company laboratories, over a period of years, using similar (non-AATCC) methods was used.

APPARATUS AND MATERIALS——

Tension Presser *(1)*.

Flatiron, electric, approximately three lbs.

Extractor *(2)*.

Marking pen and indelible ink.

Surface Pyrometer or Tempilstiks *(3)*.

PREPARATION OF TEST SPECIMEN———Cut, following along the warp and filling yarns *(4)*, a 25″ x 25″ square wrinkle-free specimen. Condition for a minimum of two hours *(5)* at 65 ± 2% rh and 70 ± 2°F (21 ± 1°C). Place the template on the specimen (see Fig 1) so that the sides of the 10″ square are parallel to the warp and filling directions and that the same amount of fabric extends beyond the template on all sides. Mark the specimen at the outer edges of the template with pen and indelible ink; also, place three dots on each side of the 10″ square—one

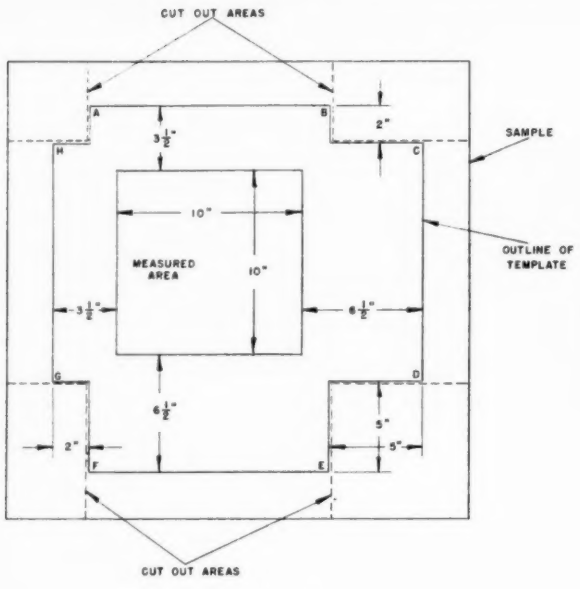

Figure 1

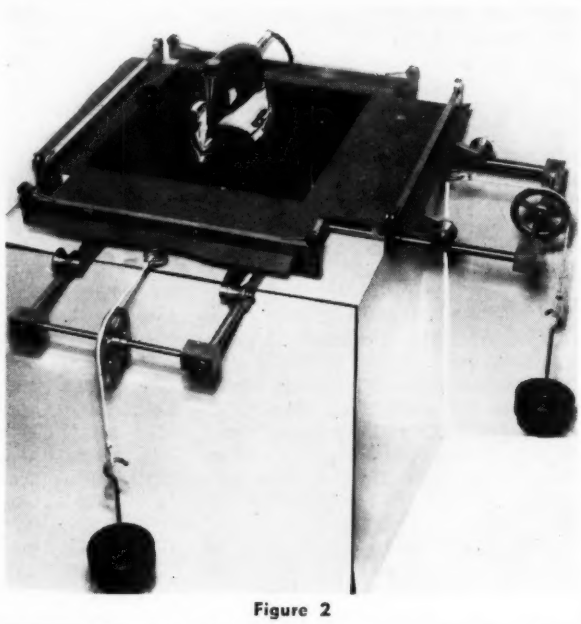

Figure 2

dot at midpoint and the other dots at approximately ¼" from each end. Measure and record.

PROCEDURE———

Laundering. Launder the specimen according to AATCC 91-1958T, Test No. I, Dimensional Changes in Woven Textiles (Excluding Wool). After pressing on the flat-bed press, condition again for a minimum of two hours at 65 ± 2% rh and 70 ± 2°F (21 ± 1°C). Measure and record separately the dimensional change of both the warp and the filling to ± 0.5%.

Dimensional Restorability. Cut out the corners of the specimen leaving two short and two long flaps. (Indicated with dotted lines in Fig 1).

Immerse the test specimen in water at approximately 100°F (38°C) until thoroughly saturated. Remove excess water by extraction until the flow of water from the extractor has substantially ceased.

Place the damp specimen on the bed of the Tension Presser (Fig 2) so that the marked lines (AB and GH in Fig 1) on the two short flaps are between the fixed clamps. In the same manner, place the longer flaps so that the marked lines (CD and EF in Fig 1) are between the movable clamps.

If necessary, stretch that portion of the fabric entering the clamp so that it fills the width of the clamp, being careful to avoid distortion of the measuring area in the process.

Using the figures as given in Table I, select the proper weights for both the warp and filling directions.

TABLE I

Dimensional change as obtained after flat-bed pressing	*Calibrated weight to be applied on tension presser (lbs)*
Any gain – 1.0% loss	0.5
1.1 – 3.0% loss	1
3.1 – 5.0% loss	3
5.1% or more	4

Apply the selected weights to both warp and filling simultaneously and gently. Allow the specimen to remain under this fixed tension during the drying operation. Pre-heat the perforated drying plate by placing on it a heated electric flatiron until the temperature *(3)* of the plate is approximately 300°F (149°C). Then place the heated plate (with the iron maintained at a temperature of 300°F (149°C) *centrally located* on the plate) on the specimen which is under tension on the bed of the Tension Presser. Do *not* apply pressure to the iron.

After about five seconds, lift the flatiron and the plate for about five seconds and then replace the assembly for another five seconds. Again lift the assembly for five seconds. This procedure is repeated as many times as necessary until no appreciable steam is released from the fabric and the specimen is completely dry.

Remove the weights simultaneously, unfasten the fabric clamps and carefully remove the specimen from the Tension Presser in such a way that the specimen is not distorted. Press the *end tabs* of the specimen with the flatiron, being careful not to distort the 10" center square. Allow the specimen to lie flat without any stresses or strains under standard conditions of 65 ± 2% rh and 70 ± 2°F (21 ± 1°C) for a minimum of two hours before measuring.

EVALUATION———Measure distances between each of the three appropriate reference points in both directions and report the average change in the dimensions of the warp and filling separately to ±0.5%.

NOTES

(1) The Tension Presser consists of a padded ironing board from which extends clamping members on all four sides. Two of the clamps are fixed to the edges of the board whereas two clamps travel on guide rails opposite the fixed clamps. The movable clamps travel on carriages which ride the rails and are drawn by dead-weight loading. Sets of weights are provided so that the load can be selected in the range of one-half pound to four pounds. A perforated aluminum plate is used to provide the drying surface. The plate is heated by means of a household-type flatiron. A special template is furnished with the apparatus to enable marking a specimen for a central measuring area and the fabric extensions to the clamps (see Fig 1). This apparatus is available from the United States Testing Company, Inc, 1415 Park Avenue, Hoboken, New Jersey.

(2) Extractor. A centrifugal extractor of the laundry type with a perforated basket about 11" deep by 17" in diameter, with an operating speed of about 1500 rpm.

Extracting machines of the type described may be obtained from: Bock Laundry Machine Co, Toledo, Ohio (Model 24BC) or American Laundry Machinery Co, Cincinnati, Ohio (Model 17" Motex).

(3) Temperature can be measured with a surface pyrometer or appropriate Tempilstiks (Cenco No. 13756).

(4) Fabrics that are badly distorted in their unlaundered state due to faulty finishing may give deceptive dimensional change results when laundered by any procedure. This also holds true if restorative forces are applied. Therefore, it is recommended that in such cases, the sample be replaced, or if used, the results of dimensional change or dimensional restorability tests be considered as indicative only.

(5) Specimens should always be conditioned from the dry side. If they have been exposed previously to high humidities, they should be allowed to dry prior to conditioning.

ISIS Review of "Book of Proceedings of the Perkin Centennial"

FOLLOWING is the text of a review of the "Book of Proceedings of the Perkin Centennial," which was published in the March 1959 issue of ISIS, Vol. 50, Part 1, No. 159. ISIS, an international review devoted to the history of science and its cultural influence, is the official quarterly journal of the History of Science Society.

"HOWARD J WHITE JR (editor): Proceedings of the Perkin Centennial 1856-1956 Commemorating the discovery of Aniline Dyes. ix + 467 pp, ill.
Sponsored by the American Association of Textile Chemists and Colorists, nd $10.00

"To commemorate the one-hundredth anniversary of William Henry Perkin's discovery, the American Association of Textile Chemists and Colorists organized an exposition and the presentation of technical papers during the week of 10-16 September 1956 at the Waldorf-Astoria in New York. "By invitation, twenty-seven societies, associations, and the United States government joined AATCC in preparation for the great event." The present large book in mauve-colored hard covers contains the text of sixty-one papers presented on this occassion. It is a lasting monument to one of the greatest celebrations of an event in the history of chemistry and chemical industry. The subjects range from the designation of colors to their psychology, from the chemistry of dyestuffs to the many fields of applying colorants. Many of the articles are original contributions to the history of color and colorants, their theory and application.

"An auspicious start in this direction is made in the first paper on "A century of progress in the development of color-fastness test methods for textiles," by M L Staples, with one hundred and thirty references. Sir Robert Robinson presents the life and work of Perkin with many quotations, among them the text of the "mauve patent, British Number 1,984 of 26 August 1856. The next paper of particular interest to historians is by Morris C Leikind. Among other things, he points the achievements of Joseph Janvier Woodward (1833-1884) and concludes: "Practically all who have written on the history of stains and staining have overlooked Woodward's contribution" (page 108.) Sidney M Edelstein uses some little known sources for his article, "Color in relation to the political and economic history of the Western world." Wilhelm Ostwald's work on color is the basis of Ernest R Kaswell's "Color designation through the ages." Fred Fordemwalt brings time-charts for "The history of the development of fast dyes." Much historical material is included in Hans Z Lecher's "Early synthetic dyes," and in James Ogilvie's "Dyes for animal fibers." L G S Brooker and P W Vittum write a particularly well-integrated survey, "A century of progress in the synthesis of dyes for photography." Most of these articles are lavishly illustrated by diagrams and chemical formulae. They bring out the logic in the scientific steps toward new synthetic dyes, the predictions and the limits of their realizations. These are subjects which should be more fully studied by any philosopher of science. Admirable as these achievements are, their connection with practical and economic consequences is still more amazing.

"While some of the papers have been especially mentioned, many of the others also contain valuable historical material, although the reader will have to make an effort to find them. In doing this, he will perhaps feel that the last seven pages of the book would have been more valuable if devoted to indexes rather than to the photographic reproduction of "Letters from heads of participating societies." In such reduction of size that they are scarcely readable without a magnifying glass."

—EDUARD FARBER

Employment Register

This column is open for two insertions per year, per member, without charge. Blanks can be obtained from, and filed with, the secretary of the Association, Post Office Box 28, Lowell, Mass. It is understood that these will be open to inspection by prospective employers who can obtain further information from the secretary.

59-9

Education: BS, textile engineering (US); extra college work in India.
Position desired: Textile engineer.
Location: New York, NY.
Age: 22; single; references.

9-7, 9-21

Future Papers

THE following list is comprised of papers submited to date for publication in future issues of the *Proceedings*. Authors and Technical Program Chairmen are requested to examine this list and call our attention to any omissions.

"Dyeing with Direct Dyes—The Effect of Various Salts"—Southeastern Section

"A Study of the Removal of Metal Ions from Cotton Fabric"—Rhode Island Section

"Accelerant Dyeing of Hydrophobic Fibers—Principles and Mechanisms" —Piedmont Section

"The Wet Processing of Cotton/Acrilan Work-Clothing Fabrics"—South Central Section

"Pile Fabrics"—Northern New England Section

"Wash-and-Wear Ratings: Subjective and Objective"—Washington Section

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AN INVESTIGATION OF INORGANIC SALTS AND OXIDES AS FINISHES FOR COTTON

RAMON M ESTEVE JR, GEORGIA ELLEN WRIGHT, and PAULINE BERRY MACK

College of Household Arts and Sciences
Texas Woman's University
Denton, Texas

In an investigation of inorganic compounds as finishes for cotton fabrics, these nine compounds gave promise of improving the functional properties of cotton fabrics: aluminum hydroxide, beryllium oxide, cobaltous hydroxide, cobaltous metaborate, lead hydroxide, manganous oxide, manganous phosphate, manganous silicate, and nickelous phosphate. Cotton treated with lead chromate was evaluated for comparative purposes.

INTRODUCTION

A SYSTEMATIC screening of oxides and salts of metallic elements as finishes which might improve the functional properties of cotton has been completed in a project which was sponsored by the Southern Utilization Research and Development Division of the United States Department of Agriculture. Seventy-four compounds, selected from various groups of the Periodic Table of the Elements on the basis of their apparent insolubility, were applied to cotton, some of them in more than one concentration. As a result, nine compounds were found which improved cotton in various respects not believed to have been reported earlier.

Previous investigators have found insoluble inorganic compounds which have improved cotton fabrics with respect to mildew and rot resistance *(8)*, water repellency *(9)*, flame resistance *(10)*, and weathering stability *(4)*. Deterioration from weathering refers to degradation from outdoor exposure; and it results from a composite of various factors including such agents as actinic damage (more accurately described as the autoxidation of cellulose catalyzed by solar radiation), the effect of atmospheric contaminants, and microbiologic degradation *(3)*.

Lead chromate has been found to give excellent results as an application for cotton to produce weathering stability *(11)*. With a finish using this compound developed in the laboratories of the Southern Utilization Research and Development Division of the United States Department of Agriculture, the stability of cotton tobacco shade cloth has been markedly increased *(4, 11)*. For this reason, lead chromate was used for comparative purposes in this study.

EXPERIMENTAL

APPLICATION OF FINISHES ———The finishes were applied by a two-bath method to 9 x 72-inch specimens of the fabric. The fabric used in these experiments was a four-ounce muslin, 56 x 56 count of two-ply yarn woven of 1⅛-inch Mississippi Delta cotton.

The specimens were immersed in a beaker of the requisite strength of the inorganic salt solution and passed through a rubber-covered squeeze roll. The reagents used were in all cases either reagent grade or USP. The fabric was allowed to dry, and then was immersed in a second bath and again squeezed dry. The specimens were allowed to dry; and then they were rinsed repeatedly. When the solution of the second bath was sodium hydroxide, the fabric was rinsed immediately without drying. The add-on taken up by the fabric was determined by the increase in weight, and checked by ashing a 0.5-gram sample.

The outlines for the application of each of the nine compounds based on the lowest level of add-on follow.

Aluminum hydroxide (add-on 3.7%). First bath, 10.0 percent aluminum acetate in water with 2.5 percent acetic acid. Second bath, 15.0 percent sodium carbonate at 70°C, cured at 120°C for 20 minutes.

Beryllium oxide (add-on 1.9%). First bath, 7.5 percent beryllium nitrate in water. Second bath, 5.0 percent sodium hydroxide.

Cobaltous hydroxide (add-on 4.5%). First bath, 6.25 percent cobaltous acetate in water. Second bath, 5.0 percent sodium hydroxide followed with hot and cold water rinses.

Cobaltous metaborate (add-on 6.0%). First bath, 6.0 percent cobaltous acetate in water containing 0.01 percent Igepon T-51. Second bath, 10.0 percent aqueous sodium metaborate.

Lead chromate (add-on 8.5%). First bath, 9.0 percent lead acetate in water with 0.01 percent Igepon T-51. Second bath, 9.0 percent sodium chromate, cured for 20 minutes at 110-120°C.

Lead hydroxide (add-on 4.4%). First bath, 7.0 percent lead acetate in water with pH 6. Second bath, 10.0 percent ammonium hydroxide saturated with lead hydroxide, cured for 30 minutes at 120°C.

Manganous oxide (add-on 14.5%). First bath, 12.5 percent manganous chloride in water with pH 6. Second bath, 5.0 percent sodium hydroxide.

Manganous phosphate (add-on 4.0%). First bath, 8.0 percent manganous chloride. Second bath, 10.0 percent sodium phosphate in water with phosphoric acid added to adjust to pH 7.

Manganous silicate (add-on 7.0%). First bath, 8.0 percent manganous chloride. Second bath, 10.0 percent sodium silicate acidified to pH 12, with some silicic acid precipitated.

Nickelous phosphate (add-on 5.1%). First bath, 7.5 percent nickelous chloride. Second bath, 10.0 percent sodium phosphate in water with phosphoric acid added to adjust to pH 7.

EVALUATION OF TREATED FABRICS———The untreated and treated fabrics were evaluated by means of the following tests.

Resistance to Leaching. Federal specification CCC-T-191b, Standard Method 5830 *(7)*.

Resistance to Laundering. Commercial Standard CS 59-44, VII *(12)*; and American Association of Textile Chemists and Colorists, Standard Test Method 36-1957 *(1)*.

Tensile Strength, Dry and Wet. American Society for Testing Materials D 39-49 *(2)*; and Federal Specification CCC-T-191b, Method 5104 *(7)*.

Tear Strength. Federal Specification CCC-T-191b, Pendulum Method 5132 *(7)*.

Abrasion Resistance. American Society for Testing Materials, Method D 1175 *(2)*; and Federal Specification CCC-T-191b, Method 5306 *(7)*.

Flammability. American Society for Testing Materials, Method D 1230-52T *(2)*; and American Association of Textile Chemists and Colorists, Standard Test Method 33-1957 *(1)*.

Thermal Stability. This was determined from the rates of decomposi-

TABLE I

Responses of nine cotton fabrics treated with inorganic compounds when subjected to evaluation tests in comparison with untreated cotton and with cotton treated with lead chromate

Fabric treatment	Percent Add-on	Color of treated cotton	Percent add-on retention after two leachings and one laundering	Relative stability to mildew and rot (soil-burial method) at half strength or less at 5%	Relative stability to outdoor weathering: After one month	After two months	After three months	Percent retention of add-on after three months of outdoor weathering	Relative stability to actinic degradation (Fade-Ometer at 53° C	Percent retention of wet breaking strength after exposure to atmospheric contaminants	Relative stability to heat degradation (over at 140° C for five days)	Response to flammability test—45° angle flame test; vertical flame test for fabrics passing the 45° angle test	Relative thermal stability	Water repellency (spray rating)
Untreated cotton	0.0	white	X	1	1.0	1.0	1.0	X	1.0	29	1.0	Burned 13 seconds	1.0	0
Lead (plumbous) chromate	8.5	orange	72	1	7.0	8.7	4.6	86	1.9	85	1.5	Passed 45° angle test Failed vertical flame test	2.0	0
Aluminum hydroxide	3.6		50	5	2.0	1.6	1.8	81	1.6	81	1.0	Passed 45° angle test	0.3	0
	5.2	white	69	4	2.0	2.0	2.0	100	X	90	1.1	Failed—burned with afterglow 48 seconds	X	0-50
	8.7		57	5	2.0	1.6	2.4	94	X	90	X	Failed—burned with afterglow 47 seconds	X	0-50
Beryllium oxide	1.9	white	80	5	3.0	3.3	4.2	100	0.9	100	0.6	Failed—burned with afterglow 38 seconds	0.2	0
Cobaltous hydroxide	4.5		75	14	3.8	5.4	4.1	80	2.5	100	1.1	Failed—burned with afterglow 13 seconds	0.7	0
	5.6	tan (light brown when oxidized)	70	16	10.0	4.7	6.0	90	3.4	100	1.2	Failed—burned with afterglow 13 seconds	0.7	0
	8.2		95	6	10.0	7.1	7.1	100	3.4	100	1.2	Failed—burned with afterglow 13 seconds	0.7	0
	16.2		97	8	5.4	5.3	5.3	95	X	95	X	X	X	0
Cobaltous metaborate	6.0	gray	74	16	2.0	2.7	3.3	100	3.3	90	0.9	Failed—burned with afterglow 15 seconds	0.9	50
	8.9		85	18	8.3	4.7	4.5	100	X	96	0.5	Failed—burned with afterglow 15 seconds	0.9	70-80
Lead hydroxide	4.4		50	2	0.9	0.8	1.0	97	0.6	97	0.6	Passed 45° angle test	1.5	70
	6.5	white	80	1	1.0	1.0	1.0	98	X	98	1.2	Passed 45° angle test	X	50
	8.4		80	1	1.0	1.0	1.0	90	X	X	1.2	Passed 45° angle test	X	50
	15.3		75	1	1.1	1.1	1.0	88	1.0	100	X	Passed 45° angle test. Passed vertical flame test	1.1	70
Manganous oxide	14.5	red-brown	86	2	2.2	2.3	2.0	96	2.2	92	0.6	Passed 45° angle test	1.2	0-50
Manganous phosphate	4.0	white	92	1	2.2	1.6	1.8	88	1.9	58	1.3	Failed—burned with afterglow 50 seconds	0.8	0
Manganous silicate	7.0	pale tan	90	1	2.2	1.4	1.4	70	1.7	70	1.0	Failed—burned with afterglow 50 seconds	1.3	0
Nickelous phosphate	5.1	cream	60	4	1.2	2.0	3.2	56	1.4	65	0.6	Failed—burned with afterglow 50 seconds	0.8	50

tion of the treated and untreated cotton fabrics at 300°C *(6)*.

Accelerated Aging—Oven Method. American Association of Textile Chemists and Colorists, Standard Test Method 26-1952 *(1)*; and Federal Specification CCC-T-191b, Method 5850 *(7)*.

Outdoor Weathering. This was evaluated by the use of frames constructed in a manner similar to those used at the Southern Utilization Research and Development Division of the United States Department of Agriculture *(5)*. The specimens, 9 x 18 inches warpwise, were placed on the inclined rack at a 45° angle facing south. The resistance to deterioration was measured in terms of loss in tensile strength.

Resistance to Micro-organisms — Soil-Burial Method. American Association of Textile Chemists and Colorists Tentative Test Method 30-1957 *(1)*; American Society for Testing Materials D 684-51 *(2)*; and Federal Specification CCC-T-191b, Method 5762 *(7)*.

Water Repellency — Spray Test. American Society for Testing Materials, D 583-54 *(2)*; and Federal Specification CCC-T-191b, Method 5526 *(7)*.

Resistance to Atmospheric Contaminants. American Association of Textile Chemists and Colorists, Standard Test Method 23-1957, modified by evaporating nitric and sulfuric acid into the chamber *(1)*.

RESULTS AND DISCUSSION

Table I embodies the major findings of this study. Cotton swatches treated with the following compounds were found to be white: beryllium oxide, aluminum hydroxide, lead hydroxide, and manganous phosphate. Nickelous phosphate-treated cotton is cream; manganous silicate, tan; cobaltous metaborate, grey; cobaltous hydroxide, light tan changing to light brown upon partial oxidation; and manganous oxide, brown.

Aluminum hydroxide, nickelous phosphate, beryllium hydroxide, lead chromate and manganous phosphate and silicate are not affected by atmospheric oxygen or by the curing conditions used in these experiments.

Manganous hydroxide is oxidized immediately during application

$$Mn(OH)_2 \xrightarrow{O_2} Mn\,O\,(OH).$$

Cobaltous hydroxide is oxidized slowly when exposed to weathering, but this oxidation can be effectuated by oxidizing with cold 0.5 percent sodium hypochlorite. The oxidized finish has the additional advantage of being more resistant to laundering and to dilute acids:

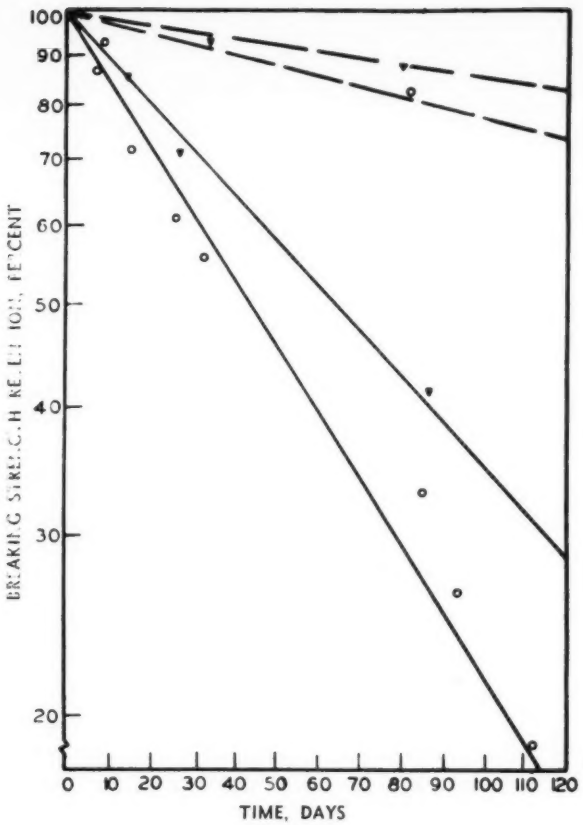

Figure 1
Retention of wet (O) and dry (▼) breaking strength after exposure to outdoor weathering. Untreated cotton, ———; treated cotton, — — —.

$$Co(OH)_2 \xrightarrow{O_2} Co_3O_4.$$

Cobaltous metaborate is oxidized similarly; and on exposure to air, the color changes from orchid to a greenish brown.

On curing, lead hydroxide either is dehydrated to the oxide or it reacts with the hydroxyl groups of the cellulose. If the fabric is not cured, it has poor retention of finish on laundering and exhibits no water repellency. If the treated fabric is cured at 120° C, it then displays good water repellancy. Lead hydroxide dehydrates to the oxide at 145° C, according to the literature.

The retention of the finish, determined after two leachings followed by one laundering, ranged from 50 to 97 percent. The greater proportion of the loss of the finish occurred during the first leaching. Since this was the case, cotton fibers treated with lead chromate and with cobaltous hydroxide were investigated with the microscope. There appeared to be some penetration into the fiber, although the bulk of the inorganic compound was deposited on the surface of the fiber.

The fact that much of the finish was found on the surface of the fiber accounts for the finding that most of the loss of add-on during the leaching-laundering procedure occurred during the first leaching, as the loosely held portion of the deposit was washed away.

In order to find the effect of the add-on on the strength of the fabrics, breaking, bursting, and tearing strength as well as abrasion resistance tests were made on the treated and untreated fabrics. Also, breaking strength determinations were run on fabrics stored for two and one-half years. The findings showed no noteworthy deterioration of the fabrics.

The deterioration of cotton fabrics from weathering was found to behave kinetically as a first-order process. Figure 1 gives the strength retention (dry and wet) of a representative trial. The results are reported as the stability to weathering obtained from the reciprocal of the relative rate of breaking strength loss. Both wet and dry breaking strength measurements were used to determine the rate of deterioration in all cases; and the same relative results were obtained by using either measurement. Wet-strength measurements give the desired information in less time than is needed when dry-strength measurements are used, because the rate of wet-strength loss is greater than that of dry-strength loss with cellulose fibers or fabrics.

The resistance to mildew and rot is reported as the time in days required for the fabric to lose one-half of its wet strength in the soil-burial test.

Both cobaltous hydroxide and metaborate afforded protection to weathering for cotton fabrics equal to that imparted by lead chromate. In addition, both these compounds afforded some rot resistance to cotton fabrics. Cobaltous metaborate also imparted water repellency to the cotton fabric.

Beryllium oxide, aluminum hydroxide, nickelous phosphate, manganous phosphate, manganous silicate and manganous oxide also afforded protection to outdoor weathering. Beryllium oxide, aluminum hydroxide, and manganous phosphate are of particular interest because they do not impart any color to the treated fabric.

All of the treated fabrics considered in this study retained their wet breaking strength when exposed to atmospheric contaminants to a greater degree than did the untreated cotton, which had a retention only of 29 per cent. The treated fabrics ranged from 58 to 100 percent.

In the test for the flammability of the treated fabrics, lead chromate, aluminum hydroxide (add-on 3.6 percent), lead hydroxide (at three levels of add-on) and manganous oxide passed the 45° angle test. Of these, only the cotton treated with lead hydroxide with an add-on of 15.3 percent passed the vertical flame test.

All other treated fabrics in this study burned in the 45° angle flame test, but many burned more slowly than did the untreated cotton, as shown in Table I.

Relative stability to heat degradation of the untreated and treated cotton fabrics was calculated from changes in breaking strength. Lead chromate, cobaltous hydroxide—(5.6 percent add-on) and manganous phosphate-treated cottons slightly exceeded untreated cotton in this test, with the remainder little or no better than, or even slightly below the untreated fabric. There probably would be few end uses for which resistance to heat degradation would be a factor.

The thermal stability of cotton treated with lead chromate exceeded that of untreated cotton by a Factor Two. Lead hydroxide, manganous ox-

ide, and manganous silicate increased the thermal stability of cotton, but to a somewhat lesser degree. Aluminum hydroxide and beryllium oxide decreased the thermal stability of cotton notably, while cobaltous hydroxide, manganous phosphate, nickelous phosphate, and cobaltous metaborate decreased this factor slightly. Cobaltous metaborate-treated cotton was similar to untreated cotton in thermal stability.

Cobaltous metaborate- and lead hydroxide-treated cottons displayed good water repellency, while some water repellency was imparted by aluminum hydroxide (add-on 8.7 percent), manganous oxide, and nickelous phosphate. Cotton fabric treated with lead hydroxide was not water repellent unless the fabric was cured at 120°C for 20 minutes after the application.

CONCLUSIONS

The improvement in certain properties of cotton by the use of each of nine inorganic compounds selected from a screening study involving 74 compounds and subjected to more intensive study in the investigation covered in this report seems sufficient to warrant their further investigation under practical conditions. The finishes producing white or cream textiles might prove suitable as household fabrics because some of them demonstrated improved resistance to weathering and to atmospheric contaminants. Some of them, in addition, were found to promote resistance to atmospheric contaminants, some degree of flame resistance, and some water repellency. Lead hydroxide-finished cotton was a white fabric which differed from the other white treated fabrics in having no resistance to weathering, although it was found to have very good resistance to atmospheric contaminants. This fabric had the added virtue, however, of possessing the best resistance to burning of any of the nine experimental compounds, together with good to very good water repellency.

The tan, gray, and brown treated cottons could find application for various agricultural end uses. Among these experimental fabrics, cobalt metaborate-treated fabric should warrant especial attention in further practical trials because of its excellent performance in the tests for mildew and rot, weathering, resistance to actinic degradation, stability with respect to atmospheric contaminants, and water repellency. Cobaltous hydroxide was similar in performance except for negative results in the water-repellency test. The manganese and nickel compounds, which gave colored treated cottons, were far less outstanding then were cobaltous hydroxide or metasilicate, although they made some contributions in some respects.

A more detailed report of this study is being prepared and will be available from the Southern Utilization Research and Development Division, Agricultural Research Service, US Department of Agriculture, New Orleans 19, Louisiana.

ACKNOWLEDGMENTS

The authors are grateful to the United States Department of Agriculture, Southern Utilization Research and Development Division, for sponsoring the research upon which this report is based. Particular thanks are due to Carl M Conrad, principal chemist, Plant Fibers Pioneering Research Laboratory, for his assistance in planning the study of which this report covers one unit and for his continued interest throughout the investigation, and to Mary L Rollins, in charge, Microscopy, Instrumentation and Analysis Group, for her help in connection with the microscopic aspect of the studies.

Gratitude also is due to colleagues in the College of Household Arts and Sciences at Texas Woman's University for suggestions and assistance, particularly to Joseph C Sherrill and Elizabeth Flowers Thomas.

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General Calendar

AMERICAN ASSOCIATION FOR TEXTILE TECHNOLOGY, INC
Oct 14, Nov 4, Dec 2, Jan 6, Feb 3, Mar 2, Apr 6, May 4, June 1 (Della Robbia Room, Hotel Vanderbilt, New York, NY)

AMERICAN COTTON MANUFACTURERS INSTITUTE
April 7-9 (11th Annual Meeting, Americana Hotel, Bal Harbour, Miami Beach, Fla); Mar 23-25 (12th Annual Meeting, Fontainebleau Hotel, Miami Beach, Fla)

AMERICAN OIL CHEMISTS SOCIETY
Sept 28-30 (Statler Hotel, Los Angeles, Calif)

AMERICAN SOCIETY FOR QUALITY CONTROL, TEXTILE DIVISION
Feb 18-19 (10th Annual Conference, Clemson House, Clemson, SC)

AMERICAN TEXTILE MACHINERY ASSOCIATION
May 23-27, 1960 (American Textile Machinery Exhibition, Auditorium, Atlantic City, NJ)

FEDERATION OF BRITISH INDUSTRIES
June 10-26 (British Exhibition of Industry, Technology, Science and Culture—Coliseum, New York, NY)

INTER-SOCIETY COLOR COUNCIL
April 11-12, 1960 (29th Annual Meeting—Philadelphia Museum College of Art, Philadelphia, Pa)

NATIONAL COTTON COUNCIL
Oct 7 (Chemical Finishing onference, Mayflower Hotel, Washington, DC); Feb 8-9 (Annual Convention, Dallas, Texas)

PHI PSI FRATERNITY
April 28-30 (57th Annual Convention, Hotel Roosevelt, New York, NY)

SOUTHERN TEXTILE EXPOSITION
Oct 3-7, 1960 (Greenville, SC)

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION OF THE UNITED STATES
Oct 13, Nov 4 (Luncheon meetings at the Hotel Roosevelt, New York, NY); Dec 2 (Annual meeting and dinner—Hotel Roosevelt, New York, NY)

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, DELAWARE VALLEY SECTION
Mar 26 (3rd Philadelphia Conference of the Graphic Arts Industry—Benjamin Franklin Hotel, Philadelphia, Pa)

TEXTILE RESEARCH INSTITUTE
March 24-25, 1960 (30th Annual Meeting, Hotel Commodore, New York, NY)

SEPTEMBER SONATA
1959

Inter Alia — Inter Nos

P J WOOD

GOOD HOUSEKEEPING

One thing we have always liked about the annual summer outings of AATCC is the opportunity they provide for meeting a lot of people who always go religiously to those assemblies, when they might, or might not, attend technical meetings during the year. This year was no exception. We met this one and that one, from all parts of the area covered by the geographical bounds of the Metropolitan Section. Among others, we remember briefly encountering smiling Ed Coughlin, now director of Consumer Services at Celanese. When we first knew him, Dr W E Coughlin was technical director of Good Housekeeping Institute, a job now occupied by our good friend George Wham.

And talking about Good Housekeeping makes us think about good housekeeping, spelt with small initials, as a mode of life and its influence in almost any activity, like that of the renowned magazine, always an influence for good.

Any branch of textile manufacture benefits by good housekeeping; a nice clean and orderly mill makes for satisfied, good-natured people; satisfied, good-natured people have a tendency to produce better work in such salubrious surroundings.

We remember George X, with whom we travelled on many occasions, and his "standard test" for eating places. As soon as we were comfortably seated at table, George would excuse himself and retire to the lavatory; to wash his hands? Oh no! If the cleanliness of the washroom was not 100% on George's scale, we were bundled unceremoniously out into the cold, cold world again, to look for another bistro that was 100% or 100% plus. George's theory was that if the washing facilities were below par, then the cleanliness of the kitchen was under suspicion too. And, after all, maybe this was not such a cockeyed idea, when you come to think of it.

The whole matter resolves itself into a question of "How to get Employees to Cooperate", which is the title of an article in "Volume Feeding Management". It might do a lot of us good to read this item, so tersely summarized by Anne Fallon in the June 15 "Digest", in these words: "By clearly defining employees' sanitation duties, offering incentives, and following up to insure continued interest and effort . . . . . it spells out the cleaning schedules for preparation, storage, service and dining areas".

Good housekeeping is good housekeeping; bad housekeeping can frequently deteriorate into involuntary lousekeeping and mousekeeping, "which" says Elmer, "ain't no good, nohow".

COLD WAR

"Not all conflict is on the field of battle. Not all warring is between peoples and nations. The turmoils that may rage in a human heart when desire struggles with conscience, when service opposes selfishness, and when immediate pleasure counters the prospect of limitless achievement is the conflict that destroys the peace of men even when armed forces wage no war. He who has mastered self has found peace, even though there be no peace around him."

GUESSING GAMES

Some person or persons unknown coined a word that is new to us in the Book Review Department of a recent number of C&EN.

The word is "Econoptimum". Maybe this word is newly in the dictionary, but we are free to admit that it is brand new to us (we don't buy a dictionary every day or two). Only the fact that the reviewer is telling about two new books that deal with economic aspects of chemical engineering in the one case and chemical processes in the other, enabled us to make what we see described as an intelligent guess as to the meaning of this crippled and weird-looking word. Naturally it is economic optimum. But, we ask, what is the writer going to do with the time saved by omission of the "omic" fraction from these two words? In the same review occur the words "optimization" and "de-bottlenecking"; the first of these, according to Webster, should mean "Extolling as the best, "Looking on the bright side". the application of which we fail to see in this connection. The modern motto seems to be "Make it hard for the reader!"

CONDENSATION

Among the verses for children we remember from 'way back, in German, was one which went:

"Die bunte Kuh
Macht manchmal 'Moo'
Gibt uns die Milch
Und Butter dazu"

The which we would translate:

The piebald cow
Who moos, (and how!)
She gives us milk
And butter enow.

We had to go all the way back to Chaucer for that last word.

This return to first principles was occasioned by the remarks of Maxwell Droke, that well-known philosopher and humorist, who is now back from the hospital and at his desk, editing Quote again after what he described as "a brief pause for punctuation; a sort of typographical correction". He goes on to explain, "What was my colon is now a semicolon."

And now, a scant month from his return to circulation, he writes a characteristic masterpiece on the family cow and its increasingly rapid decrease in family farm life due to a lot of things. One used to talk about "keeping a cow", whereas, it seems to us more as if the cow did the keeping, in two respects. In the first place, she did keep the farm family in milk, and in the case of an industrious family, in the makings of butter and its by-product, buttermilk. But in the second place, she kept the family, or some individual in the family at home, for the two daily milkings, which had to be performed, morn and eve, rain or shine, perforce, also willy-nilly, likewise of necessity.

Dr Droke draws attention to one of the main reasons for the decline of the farm family furnisher of milk, the invention of a method of concentrating and canning fresh whole milk. By this process, it seems, it is possible to reduce the volume of three quarts of fresh milk to one quart of the concentrated product, and this occupies only one-third of the usual space in the refrigerator, which is an advantage, when the refrigerator is apt to become over-filled with everything from washed and frozen vegetables of all types to other assorted odds and ends, from asparagus to zinc ointment.

This is an even greater saving than that accomplished by the invention of rubber, concerning which some high-flight scientist has declared that this innovation has enabled women to occupy a third less space than formerly.

Transportation costs on the smaller volume (of milk, not women) should be appreciably less; cost of containers would dwindle away to one third; icing would not be required, as the container would not need to go into the ice-box until it had been opened for use. The cost of evaporation, we do not know, but Maxwell Droke seems to think that it should be such as to provide a sizable decrease in cost to the consumer. "Mebbe" say we, remembering with sorrow past experiences. "Mebbe not!" says Elmer, the pessimist.

Anyhow, let us hope that no one will ever evaporate down the milk of human kindness. It's scarce enough now.

WRITING

It might have been Confucius, but it was actually Aristotle who said: "To write well, express yourself like the common people, but think like a wise man."

Epictetus, of whose writing we have nary a word, said: "If you wish to be a good writer, write."

Gardner Quincy Colton it was who first used nitrous oxide, alias laughing gas, as an anesthetic in the extraction of a tooth, but it was Charles Caleb Colton who left us this piece of good advice: "That writer does the most, who gives the reader the most knowledge, and takes from him the least time." Q.E.F.

Abstracts

Allied Steps Up Output of Caprolan Nylon Tire Cord

Anon, *Modern Textiles* **40**, 35, June, 1959

While Tyrex rayon and nylon are battling for the 400-million-pound annual tire cord market, a new competitor has appeared: Caprolan nylon. This new fiber is said to be in full production at the plant of the Allied Chemical Corp near Hopewell, Va, and is already being used by all major U S tire manufacturers, according to the writer.

The nylon tire yarn, trade-named "golden Caprolan" because of its naturally golden color, is going into tire casings for use in passenger cars, trucks, buses and "off-the-road" equipment.

The new tire yarn is the result of ten years of research work, which was directed toward increasing the weight of the molecule to the optimum point for strength and developing an additive to protect the added strength from degradation by heat. It is the additive which gives the yarn its golden color.

Caprolan nylon tire yarn is manufactured from a polymer based on epsilon-aminocaproic acid, with a molecular construction almost identical to that of nylon 6,6.

Among the advantages claimed for the new yarn are high heat stability, high flex fatigue resistance, which minimizes blow-outs, and high resistance to moisture.

Caprolan yarns are also being used in cordage, fire hose, webbings, and other industrial applications, and in texturized form in carpets and upholstery.

The Action of Enzymes on Sizing Materials

Campbell, K S, *Textile World* **109**, 73, 77, July, 1959

The most popular and effective method of removing size from fabrics is by the use of enzymes. These are complex, nitrogen-containing organic substances that are secreted by the cells of living organisms and have the power to accelerate specific changes to a pronounced degree.

To remove size, enzymes are selected which have the power of solubilizing starch. There are a number of sources for such enzymes. Malt diastase, or amylase, which is prepared by extracting malt obtained from barley grain, has been used for cloth desizing for over 100 years. Useful bacterial enzymes are derived from several types of micro-organisms, and extracts from the pancreatic glands of slaughtered livestock provide a useful animal amylase.

Most starches consist of two fractions: amylose, constituting about 25% of the total, and amylopectin, the remaining 75%. Amylopectin provides the viscosity for the size, and is the more difficult fraction to solubilize.

Amylase exists in two forms known as alpha- and beta-amylase. Only the former is effective in solubilizing starches, although if some beta is present the efficiency of the alpha is increased considerably. Malt contains both types of amylase, while bacterial and animal products are essentially alpha-amylase. Even more important, however, are the activity and stability of the enzymes, and probably, according to the author, the best choice for all-around textile use is a bacterial type.

The stability of these enzymes is impaired by a rise in temperature; on the other hand, the enzyme activity is doubled for every 10°C rise in temperature. It is therefore necessary to find the proper balance between stability and activity, and also to determine the optimum pH of the solution. A temperature of 140°F for the padding liquor is considered good practice.

Some amylases are fully effective only in the presence of chlorides, and require the addition of common salt. A nonionic surfactant helps to wet the fabric and the starch. Heavy-metal ions, phosphates, phenol, formaldehyde, chlorine and ionic surfactants all affect amylase adversely.

Instructions are given for carrying out the enzyme treatment in the plant.

A Comparison of Different Types of Surface-active Agents in Laboratory Carbonizing

Crewther, W G and Pressley, T A, *Textile Research J* **29**, 482-6, June 1959

It has been shown previously that the loss of tensile strength which occurs when wool is moistened with dilute sulfuric acid and baked at about 100°C is decreased by the addition of surface-active agents to the acid.

The original laboratory tests have also been extended to industrial carbonizing trials, in which the inclusion of a nonionic surface-active agent resulted in an increase in wool yield and the production of stronger yarn. In industrial practice the nonionic agent proved more effective than an anionic agent.

Eighty-eight nonionic surface-active agents, nearly all containing polyoxyethylene as the hydrophilic group, and also some anionic and cationic agents have now been tested in the laboratory to determine the extent to which they protect wool from loss of tensile strength during carbonizing. The results are summarized in a table.

Nonionic agents in which the lipophilic portion consists of polyoxypropylene provided little protection even at the highest concentrations tested, whereas nonionic agents containing an alkyl or aryl hydrocarbon group were generally effective. With the latter compounds, the length of the polyoxyethylene group influenced the optimal concentration of the reagent. Anionic agents were ineffective at low concentrations; cationic agents were comparable in their effects with nonionic agents.

The authors comment that there are also observable differences in the color of the wool after carbonizing in the presence of different surface-active agents. The purity of the agent used may be responsible for this effect. It is also emphasized that the concentrations of surface-active agents needed to provide protection against damage will depend on the grease content of the wool entering the acid bowl.

No direct evidence concerning the mechanism of this protective action has yet been obtained, but the authors suggest two possible explanations.

Four references to the literature are cited.

Adsorption of Labeled Sodium Carboxymethylcellulose by Textile Fibers

Hensley, J W and Inks, C G, *Textile Research J* **29**, 505-13, June, 1959

An important industrial use of sodium carboxymethylcellulose (CMC) is as an additive to synthetic detergent compositions intended for laundering applications. It is well known that a small percentage of CMC in such formulations is very effective in preventing the redeposition of soil once it has been removed from the substrate (fabric). This at least is true when the substrate is cotton. Published information on the performance of CMC with other types of fibers is quite limited, but it is known that the effectiveness of CMC in preventing the deposition of carbon soil on fabric varies greatly with the type of fiber involved.

A tagged CMC containing C^{14} was prepared. This was employed to measure the adsorption of CMC by textile fibers, and in the case of cotton, to investigate the relationship between adsorption and detergency action.

Adsorption of CMC by cotton was found to depend on the presence of excess cations in solution (from inorganic electrolytes), increasing with cation concentration and valence. Equilibrium adsorption of CMC in the presence of excess cations was found to have a zero temperature coefficient. Variation of pH within the alkaline range had no significant effect.

Limited measurements with fibers other than cotton indicated little or no adsorption by wool, Orlon or acetate (in the presence of excess cations). There was significant adsorption by nylon and rayon, but this adsorption was greatly reduced by addition of an alkylaryl sulfonate.

Detergency evaluations with the labeled CMC and with unlabeled material indicate that CMC adsorbed on cotton has a significant action in preventing redeposition of particulate soil materials. The adsorption and detergency data indicate that the quantity of CMC required to form a monomolecular layer on cotton fibers may be on the order of 400-500 micrograms per gram of cotton.

The authors point out that the addition of an electrolyte to a detergency system, while it increases the adsorption of any CMC present, also tends to increase the deposition of soil. In practice, however, the beneficial effect of the electrolyte on CMC adsorption more than counteracts the adverse effect of increasing soil deposition.

Twenty-four references to the literature are cited.

Wash-fast Characteristics of Resin Finishes on Cotton and Rayon Goods

Somers, J A, *Textile Recorder* **77**, 63-5, May, 1959

In the resin finishing of cellulose fiber materials, the usual practice is to form a resin within the fibers by impregnation with a solution of a resin intermediate having the desired water-solubility, followed by drying and curing (in the presence of a catalyst) at a high temperature (say 140-150°C) for a short period. Any resin which may be loosely adhering to the surface of the fibers is subsequently removed by washing.

In general, the permanence of a textile finish is the more satisfactory when the finishing agent becomes chemically united to the fibers of the material. Recent developments with dimethylol cyclic ethylene urea indicate that this resin tends to unite chemically with the cellulose molecules better than the older resins (eg, urea-formaldehyde).

In recent years the importance of the fastness to washing of resin-finished goods has much increased, for the reason that, apart from the use of resins to give fabrics resistance to creasing and washing shrinkage, this particular method of finishing has also been adapted to produce the wash-and-wear finishes now so popular. The result of this development is that resin-finished goods are, to a much larger extent, being required to be washfast.

The washfastness of resin-treated fabrics is usually satisfactory when the washing is effected with a neutral or alkaline detergent liquor; with reasonable care the resin is only slowly removed. If, however, the liquor has a pH below 4, the resin is removed to a considerable degree. Strongly acid liquors must therefore be strictly avoided.

The author refers to the damage which can result to a resin finish from a laundering sequence which includes bleaching with a hypochlorite.

Resin-finished cotton and rayon fabrics sometimes have a tendency to pick up dirt from the washing liquor during laundering, a phenomenon known as "wet soiling". It has been shown that this is caused by the presence of certain substances, particularly thermoplastic compounds which are sometimes added to the resin finish to produce special effects (eg, water-repellency and softness). By contrast, fabrics treated with methylol resins without these additives have generally been found to be more resistant to wet soiling than untreated control fabrics.

Several references are made to the literature.

(Additional Abstracts on page 176)

Du Pont Dyes for Verel Modified Acrylic Fiber

Anon, *Dyes & Chem Tech Bull (Du Pont)* **15**, 31-44, March, 1959

Verel is the trademark for Eastman's modified acrylic fiber. It is being produced in bright and dull lusters. The fiber is made in two types: "Regular" (conventional textile fiber) and "Type III" (high-shrinkage type).

The chemical and physical properties of Verel include the following: sp gr 1.37; moisture regain, 3.5-4.0%; spun yarn shrinkage 1-3% in boiling water, 2-5% in air at 300°F ("Regular" type), 28-32% in boiling water, 35-40% in air at 300°F ("Type III"); good crease retention and wrinkle recovery. The fiber is difficult to ignite, is self-extinguishing and leaves a hard black char. It has exceptional resistance to chemical degradation and is not attacked by moths or mildew.

Fabrics made of Verel may be ironed at low iron setting or normal steam pressing after drycleaning. Temperatures over 300°F cause stiffening and discoloration.

Verel is dyeable with three types of dyes—cationic, disperse and neutral-dyeing premetallized dyes. It can be dyed in raw-stock, piece, skein or package form, and lends itself very well to blending with wool, cotton, rayon and acetate.

Cationic dyes are applied with addition of acetic acid, sodium acetate, salt, and a nonionic surfactant at 190°F.

Disperse dyes are applied with a suitable dispersing agent at 180-205°F. They need no carrier for light and medium shades. For heavy shades, an addition of Verel Dyeing Assistant and acetic acid, or Dowicide A, is recommended.

Capracyl (neutral-dyeing premetallized) dyes are applied from a dyebath containing Verel Dyeing Assistant, ammonium acetate, and acetic acid, at 180-200°F. Light and medium shades require no carrier.

Suitable dyes of all three classes are suggested, and tables of fastness to light and washing are included.

Recommendations are included for dyeing of blends of Verel with acetate, triacetate, Acrilan, Dacron, nylon, Orlon, wool and cellulosics.

FUTURE PAPERS

The following papers will appear shortly in *American Dyestuff Reporter:*

"The Chemistry of the Aminonaphthoquinones"

"Durable Creases Produced in Cotton and Resin-finished Cotton Fabrics by an Alkali Process"

"The Improvement of Selected Physical Properties of Partially Acetylated Cotton Fabrics"

News of the Trade

Metallic Yarns Institute Formed

The formation of a trade association in the Metallic Yarns Industry was announced earlier this month by Lanier Branson Jr of the Fairtex Corp, Charlotte, NC, newly elected president of the trade group which will be known as the Metallic Yarns Institute. Also elected as officers pursuant to the Association Bylaws at its organizational meeting in New York were Alvin Nadel, Standard Yarn Mills, Inc, Woodside, NY, vice president, and Ralph M Freydberg, Metlon Corp, New York, NY, as treasurer. M J Lovell, attorney-at-law, was retained as director-counsel.

Mr Branson also announced the formation of the board of directors which, in addition to the above named officers, consists of the following: George Berry, Multi-Tex Products Corp, Newark, NJ; Jack Gutcheon, Malina Co, New York, NY; Robert Klingenberg, Metal Films Co, New York, NY; Robert E Lewis, Reynolds Metals Co, Richmond, Va; Amos Ruddock, Dow Chemical Co, Williamsburg, Va; and W T Snyder, Nylco Products, Inc, Clinton, Mass.

Mr Branson stated that the purpose of the Association is to promote the general welfare of the metallic yarns industry and its members and its general usefulness to the public at large. One of the first orders of business was the establishment of a Standards Committee consisting of Messrs Freydberg (Metlon), Lewis (Reynolds), and Ruddock (Dow).

Polyvinyl Chemicals Opens NY Sales Offices

Polyvinyl Chemicals, Inc has announced the opening of New York sales offices at 274 Madison Avenue. Joseph E Conklin has been appointed manager of the office, which will serve the greater New York area.

Mr Conklin was formerly with Antara Chemicals Division of General Aniline & Film Corp.

Phi Psi to Meet at AATCC Convention

A breakfast meeting of members of Phi Psi Fraternity will be held at this year's AATCC convention in Washington, DC. Phi Psi men will hold their own "convention within a convention" on Saturday morning, October 10th, at 8:30 AM in the Shoreham Hotel.

John E R Hayes

Lawson Hayes

Hayes Textiles to Handle NDMC Equipment in South

National Drying Machinery Co, Philadelphia, Pa, has announced the appointment of the firm of Hayes Textiles, Inc, Spartanburg, SC, as Southern agent for sales of "National" loop, tenter, roll, piece goods, skein, heat setting, curing and other drying and conditioning machinery.

John E R Hayes and Lawson Hayes have stated that this new arrangement will greatly facilitate the handling of inquiries and orders for "National" drying equipment in the southern territory.

To Manufacturers of Dyestuffs, Textile Chemicals, Wet Processing Machinery, Laboratory Equipment, and Incidentals for the Wet Processing Plant:

The Twenty-fourth

ANNUAL PROCESSING REVIEW NUMBER will appear on December 14th, 1959. You are cordially invited to submit information concerning your new products that have been placed on the market since November, 1958.

How to submit information:

Please list your products alphabetically, compiling each category (ie, chemicals, dyestuffs, etc) separately. Information should include the trade name of the product and a BRIEF summary of its uses and properties. The information should be typed, double-spaced, on 8½ x 11 sheets of paper. If illustrations are necessary, glossy photos or black ink drawings should be furnished. If the trade name is registered or the product is patented, please so note.

In order to insure your new products being listed in our issue of December 14th, information concerning them should be in our office no later than November 16th.

It is important that you list **ONLY THOSE PRODUCTS WHICH HAVE BEEN BROUGHT OUT SINCE NOVEMBER, 1958.**

AMERICAN DYESTUFF REPORTER
44 East 23rd St, New York 10, N Y

Fancourt Names Latin American Agent

W F Fancourt Co, Philadelphia, Pa, has announced the appointment of A M Romero Corp, Empire State Bldg, New York, NY, as export agents for the Fancourt firm.

The Romero firm, which will represent Fancourt in the Carribean area and Central and South America, has been in business since 1953, but Mr Romero himself has been in the textile equipment business for 40 years. His former associations include the Saco-Lowell Shops, Boston, Mass, and Standard Mills Supply Co, Providence, RI, where he was general manager.

Century Chemical Names Distributors

Century Chemical Corp, New York, NY, has expanded its sales activities for phthalocyanine pigments, dyes and organic intermediates manufactured by Wilson Organic Chemicals, Inc, a subsidiary of Century, with the appointment of six distributors. According to J W Stevens, vice president of sales for Century, the recently completed distributor agreements will supplement Century's own sales and technical service organization.

The newly appointed distributors, who will carry the complete line of pigments, dyes and intermediates manufactured by Wilson, are as follows: Argyle Chemical Co, New York, NY; Arondy Corp, New York, NY; Dixon Chemical and Research, Inc, Bloomfield, NJ; Raritan Dyestuff Corp, New York, NY; Wilson Dye & Chemical Distributors, Inc, New York, NY; and Young Chemicals Associated, Greensboro, NC.

Silk & Rayon Institute Name Change

Members of the Silk & Rayon Institute, Montreal, Canada, have voted to change the name of their group to the Man-Made Fibres Textiles Institute, to make the title more representative of present industry activity.

A statement by the Association, which represents 50 establishments engaged in the production of man-made fibers and fabrics, announced that, after lengthy consideration, the group was adopting "the now familiar generic name for modern textiles of 20th century origin."

BFG Chemical to Display Textile Chemical Advances

A week-long, one-company "trade show" to introduce new products and processes involving textile chemicals to all phases of the textile industry has been announced by B F Goodrich Chemical Company.

The introduction, in the form of a comprehensive display in the Blue Room of the Sheraton-McAlpin Hotel, New York, NY, will take place October 19 through October 23.

The display—with the theme of "Profit with Products for Textile Improvement"—is particularly directed to textile converters, finishers, and merchandising people. The exhibit will be open free of charge to all in the textile trade. Hours of the exhibit will be 10 AM to 7 PM daily except for the opening day when the hours will be 2 PM to 7 PM.

Highlights of the display will include nonwoven fabric technology, decorative finishes, wear-resistant finishes, heat sealability, and dimensional stabilization. According to L L Shailer, manager of textile chemicals sales development, the exhibit is primarily designed to serve as an informational medium to focus attention on new processes and other new developments within the industry.

Textile chemical products of BFG Chemical include Geon vinyl resins and latices and vinyl acetate latex, Hycar acrylic and nitrile latices, and Carbopol water-soluble resins.

Moretex Sets Up Graduate Fellowship at NC State

Moretex Chemical Products Co, Spartanburg, SC, has established a graduate research fellowship in the Textile Research Center at North Carolina State College.

Announcement of the creation of the fellowship was made by Paul C Thomas, president of the company, who said the chief purpose of the award will be to broaden the knowledge of certain chemicals and chemical processes used in the textile industry.

At the outset, he said, emphasis will be placed on the study of chitin, a major component of shrimp shells. The material is currently marketed by Moretex under the tradename of "Kylan."

College officials said Preston G Baker, a 1959 graduate of North Carolina State College's School of Textiles, has been selected as the first recipient of the fellowship.

Moretex Chemical Products Company is an outgrowth of Moreland Chemical Company, established in 1908. The firm manufactures textile sizing materials and wet finishing auxiliaries.

Re-engineering Slated for GAF's Calvert City Plant

General Aniline & Film Corp's acetylene derivatives plant at Calvert City, Kentucky is being re-engineered to increase rated capacity by incorporating into existing units recent technological advances in design by the Dyestuff and Chemical Division.

The decision to make these alterations reportedly was brought about by increasing demand for polyvinylpyrrolidone (PVP) and the various intermediates required in its synthesis.

All products from this plant are now in adequate supply and the construction work has been scheduled in a manner to avoid interference with production, it is stated.

The original plant, completed three years ago, was the first plant for full-scale commercial production of high-pressure acetylene chemicals built in this country.

Hanes Hosiery Mills Co Now Wholly Air Conditioned

Gordon Hanes, president, has announced that Hanes Hosiery Mills Company has completed air-conditioning of the preboarding department, dyehouse, final boarding department and stock room at a cost of $500,000, thereby making Hanes the first hosiery mill to be completely air-conditioned.

"The temperature, as high as 240 degrees, required for boarding and dyeing stockings, creates room temperatures as high as 105 degrees, making the problem of air-conditioning these mill areas a difficult one from an engineering standpoint," Mr Hanes said. "At the same time, the heat in these departments made them the least comfortable to work in. This has been particularly noticeable in the Hanes plant because all other departments have been completely air-conditioned for some time.

"After careful study we decided that the increased comfort of our people more than justified the investment. To solve the mechanical problem of cooling these high-temperature areas, we called in consulting engineers, who have worked out the mechanics satisfactorily.

"The air-conditioned dyehouse and boarding and preboarding rooms now maintain a temperature under 80 degrees and 50% relative humidity. During hot days this has meant greater comfort and better quality. We feel that the investment is a wise one," he concluded.

Metro-Atlantic Names Baird Chemical Export Agent

Metro-Atlantic, Inc, Centredale 11, RI, has appointed Baird Chemical Corp, 10 West 33rd Street, New York 1, NY, as exclusive export agent. Baird Chemical Corp will handle Metro-Atlantic's complete line of chemicals for the textile and allied industries.

Joseph M Baird, president of Baird Chemical Corp, is an authority on foreign trade relations, and has published many articles on chemical exporting and importing.

This new association is designed to enable Metro-Atlantic, Inc to give better service to the foreign market and also broaden Baird Chemical Corp's line of export products.

LTIRF Signs Contract with Avco

The Lowell Technological Institute Research Foundation recently signed a contract with Avco Corporation for research on polymeric materials for the Radar Cross-Section program, according to Dorrance H Goodwin, executive director.

The contract, which will be under the direction of James B Pierce of LTI's chemistry faculty, is for a period of nine months.

3M to Double Scotchgard Production Capacity

Doubling of production capacity for its Scotchgard brand stain-repeller is expected by Minnesota Mining and Manufacturing Co, St Paul, Minn, with the building of a new 4.5 million plant in Decatur, Ala.

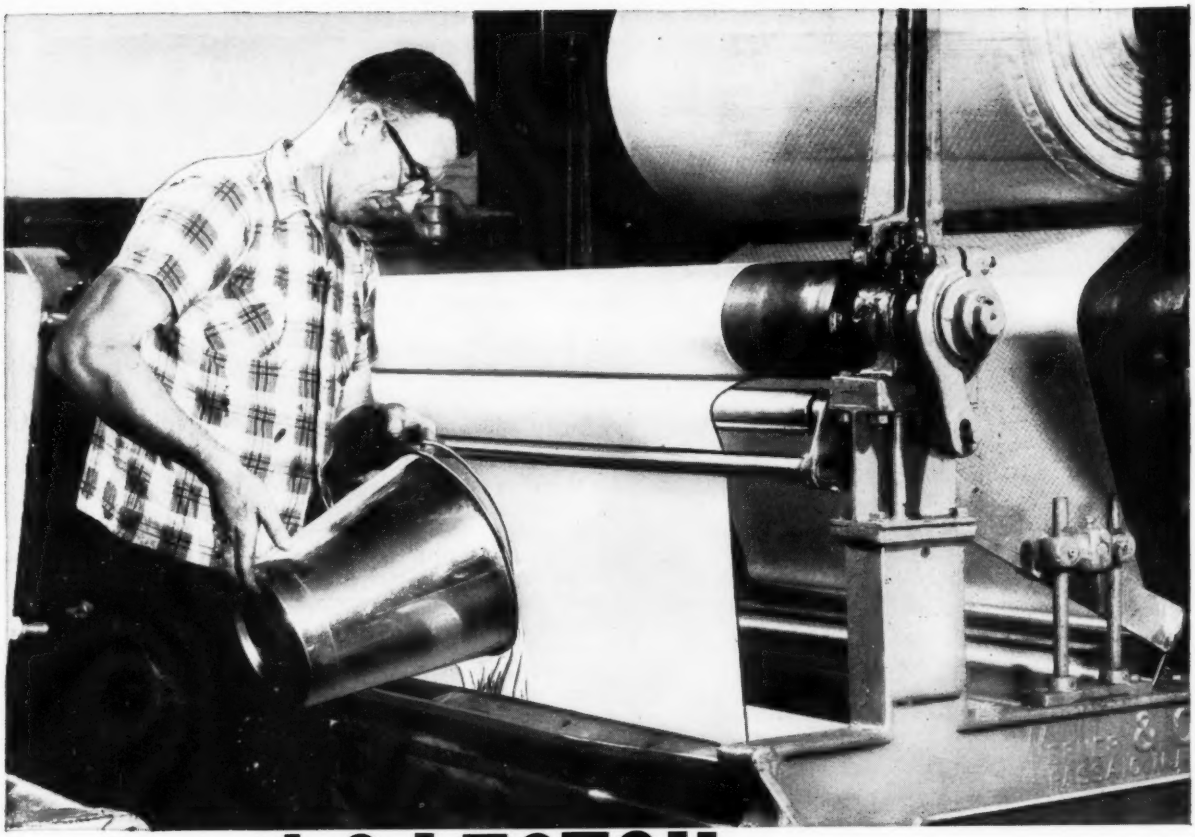
Plant completion is expected early in 1961.

The plant will manufacture fluorochemicals for a wide range of industries — textiles, leather, paper, and electronics—according to J W Selden, general manager, 3M Chemical Division.

Importance of the textile market to the firm's chemicals was one of the reasons for choice of the Alabama plant site.

"Sales of the stain-repeller to the textile industry have taken a sharp upward rise during the year," Mr Selden said, "and with the development of our new application for the wash-and-wear market, we believe this demand will not only continue, but will definitely accelerate."

The plant will be built on a 500-acre tract of land bordering the Tennessee river and providing access to state dock facilities and space for possible future expansion of 3M operations.



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Aquaprint Supra Colors and Reactor

Two related developments which are said to provide pigment prints of extraordinary fastness to severe washing and both wet and dry crocking were announced recently by Interchemical Corporation's Color & Chemicals Division, Hawthorne, N.J. These are the new Aquaprint Supra Colors and Clears and Aquaprint Reactor for application by the pigmented oil-in-water emulsion system. Aquaprint Supra Colors and Clears are claimed to be suitable for printing a wide variety of fabrics made from cotton, linen, rayon, acetate, polyamide, polyester, acrylic, glass, and other natural and synthetic fibers and blends.

Aquaprint Supra Colors and Clears reportedly are formulated with reactive binders, thereby differing from the regular Aquaprint Colors and Clears which are formulated with nonreactive binders. Aquaprint Reactor is described as a concentrated solution of an organic chemical which, under proper conditions of dry or wet heat, functions as a highly efficient cross-linking agent between the reactive binders present in printing emulsions made with Aquaprint Supra Colors. When this cross-linkage occurs, the individual molecules making up the binders reportedly are bridged by the cross-linker to produce very large molecular aggregates which are much less soluble than are the individual molecules in water, detergent solutions, and organic solvents. It is stated that, during the drying, curing, or aging operation after printing, these large molecular aggregates containing finely dispersed pigment particles form an integrated, pigmented film on the fibers, which is highly resistant to commercial laundering, repeated home washing, and both wet and dry crocking or rubbing.

There is said to be evidence also that cross-linkage occurs between the reactive groups of the binders and the reactive groups present in certain of the synthetic fibers, such as the polyamides, polyesters, and polyacrylates, thereby contributing further to the fastness of the pigment prints on fabrics made from those fibers. The improved fastness obtained on cellulose and regenerated cellulose fibers is said to indicate that there may be some degree of cross-linkage with those fibers. Likewise, the high degree of fastness on glass fabrics which have been treated with Quilon before printing reportedly makes it appear likely that there is a cross-linkage between the reactive binders and the Quilon-treated glass fibers.

Maximum fastness to severe washing or scrubbing and both wet and dry crocking is claimed to be obtained by printing with an emulsion prepared from an Aquaprint Supra Color and Clears and Reactor, drying, and curing for three minutes at 300°F. The fastness obtained by acid or neutral aging very nearly equals that provided by curing, it is stated. This is said to be particularly important when Aquaprint Supra Colors with Aquaprint Reactor added are printed alongside conventional dyes which are developed by acid or neutral steam—also, when printing fabrics which will not withstand high temperatures without damage to the fibers. Can or tower drying, without curing or aging, is said to provide satisfactory fastness for many end uses.

In some instances where maximum fastness to wet crocking is not required, Aquaprint Supra Colors and Clears are used without the Aquaprint Reactor. When the fabrics are printed, dried, and cured, excellent fastness to washing and dry crocking is said to be obtained.

Occasionally Aquaprint Supra Clears and Aquaprint Reactor are employed in conjunction with the regular Aquaprint Colors. The fastness to washing and crocking reportedly approaches that obtained with Aquaprint Supra Colors, while fastness to wet crocking is decidedly better than that obtained when the regular Aquaprint Colors and Clears are used without the Aquaprint Reactor.

It is stated that, by judicious use of Aquaprint Supra Colors and Clears and Aquaprint Reactor, printers of cottons and synthetics are now able to produce pigment prints which will meet virtually any requirement for fastness to washing and crocking.

New Line of Disperse Dyes for Polyesters

A new line of disperse dyes which are said to be especially satisfactory for application to polyester fibers has been announced by Sandoz, Inc. Bearing the trademarked name "Foron ultra-dispersed," the line is to include thirteen dyes by the end of the year. Seven have already been introduced; three yellows, two oranges, a blue, and a scarlet. Four of the seven are patented colors.

Foron ultra-dispersed dyes are of extremely minute particle size. It reportedly would take 50 in line to equal the diameter of a human hair.

Favorable properties of these colors on polyester fibers are said to include improved fastness to light, sublimation, wet treatments, gas fading, perspiration and crocking. Dyeing performance is said to include excellent dispersibility in water, good fiber penetration, and freedom from filtering out in package dyeing.

Liquid Inhibitor

O'Brien Industries, Inc, PO Box 72, Caldwell, NJ, has introduced O'B-HIBIT-L 32, a liquid corrosion inhibitor for use with muriatic (HCl) acid, phosphoric and other liquid acids. It is said to be specifically designed to prevent corrosion on metals when added to the acids. Recommended concentration is from 2% to 3% by volume with the concentrated acid. The new inhibitor reportedly gives excellent corrosion protection and is designed to meet Military specifications for chemical cleaning and rust removal.

Metrozol Dyestuffs

Metro-Atlantic, Inc, Centredale 11, RI, has announced the addition of Metrozol dyestuffs to its line——a new series of azoic dyestuff compositions especially developed for printing applications where neutral aging is necessary. The Metrozol colors reportedly can be developed either with neutral or acid steaming, but their greatest use is expected to be in those patterns where acid aging is not desirable. For example, when printed alongside fiber reactive dyes or vat colors, the entire pattern can be developed by neutral aging, it is claimed.

Metrozol colors are available in either powder form or in solution. At the present time the range includes Metrozol Yellow NG, Metrozol Scarlet N3R, Metrozol Scarlet FNR, Metrozol Red NG, Metrozol Red NR, and Metrozol Blue NB.

Further additions to the range of colors are in the development stage and will be offered to the trade in the future.

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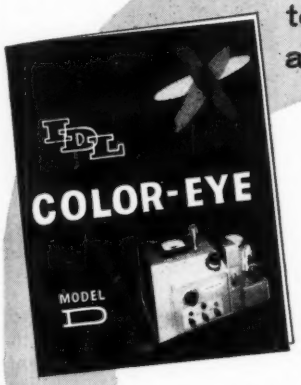

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• NAMES IN THE NEWS •

Marnon

Schaaf

Brewer

Wilkinson

Donald E Marnon has joined Otto B May, Inc, Newark, NJ, in the capacity of technical director.

Mr Marnon was formerly vice president and a member of the board of directors of Berkshire Color and Chemical Co. His earlier affiliations had been with American Aniline Products, Inc (later Koppers Co, Inc) and General Aniline & Film Corp. It was with GAF's General Dyestuff Co division that Mr Marnon and John H Hennessey developed the Marhen Process.

Mr Marnon has been very active in AATCC, having served as a national councilor and chairman of the Metropolitan Section.

Laszlo Auer, former manager of Geigy Chemical Corp's Textile Pigment Research Laboratories, has reactivated his practice as a chemical research consultant at 27 Lakeview Rd, New Rochelle, NY, specializing in the fields of textiles, protective coatings, synthetic resins and elastomers. Prior to his association with Geigy, Dr Auer was president of Aula Chemicals, Inc, a New Jersey corporation.

Dr Auer holds about 90 U S patents, many of them assigned or licensed, and about 400 foreign patents. Among these are technical achievements relating to pigmented oil-in-water emulsions for textile printing and dyeing.

American Cyanamid Co has announced the appointment of **John C Hyatt** as a sales representative to handle dyestuff sales in the state of New York and **Donald C Issing** as manager of advertising and promotion for the textile chemicals department.

Mr Hyatt was most recently associated with Rhinelander Paper Co, Rhinelander, Wisc.

Mr Issing joined Cyanamid in 1957. Prior to this time, he was associated with both the B F Goodrich and U S Rubber Companies.

Nopco Chemical Co, Newark, NJ, has announced the appointment of **Don Schaaf** as manager of the Textile Chemicals Dept. He succeeds **Walter E Brewer**, who has been named sales manager of Jacques Wolf & Co, a Nopco subsidiary. Mr Brewer, who joined Nopco in 1936, will continue as manager of the Textile Fibers Department.

Mr Schaaf joined Nopco in 1952. In his new post he will be responsible for all activities of the Textile Chemicals Dept, and will be especially concerned with the planning and improving of the product line.

Edward R Heintz has been named manager—dyestuff industry sales, and **Otto F Habel** as product line manager —vat dyestuffs, for General Aniline & Film Corporation's Dyestuff and Chemical Division.

Mr Heintz has been associated with General Aniline & Film Corporation for 29 years. Prior to his new appointment, he was product line manager—vat colors and has also served as manager of both the Chicago and Philadelphia branch offices.

Mr Habel joined the dyestuff division over 30 years ago. Prior to his new appointment, he was assistant technical manager, Marketing Department, Dyestuff and Chemical Division.

New assignments for five men in the Sales Department were recently announced by Union Carbide Chemicals Co, Division of Union Carbide Corp. Technical representatives transferred are: **Arthur A Boucher** to the New York District from Buffalo, and **Malcolm H Mackay** to the Buffalo District from Newark. Having completed the sales training program, the following men have been named technical representatives: **William R Britton** to the Moorestown, NJ District; **Donald M Sullivan** to the Cleveland District; and **Frank S Wimer** to the Newark District.

R Stewart Wilkinson has joined John Campbell & Co, Inc, Perkasie, Pa, as technical director and plant superintendent. He will be in complete charge of research and development.

Mr Wilkinson, since 1951, has been an associate professor of dyeing and finishing at Philadelphia Textile Institute. His previous affiliations were with General Aniline & Film Corp for 14 years and Ciba Co, Inc as technical director in the Philadelphia area.

Several organization changes in the Sales Department of Allied Chemical Corporation's Solvay Process Division were announced recently.

Included in the changes were appointment of **Robert E Clagett** to the position of assistant manager of Solvay's Pittsburgh Branch Sales office, and **Richard A Marshall** to the post of assistant to the manager of the Organic Chemicals Section. In addition, **Stuart P McNeill** has moved from the Philadelphia Branch to New York, where he will assist in carrying out administrative functions of the Sales Department, and **Theodore W Reed** has been transferred from New York to Solvay's Boston Branch, where he will handle sales in one of the major territories of that office.

The new assistant manager of the Pittsburgh Branch, Mr Clagett, has been with Solvay since December 1952.

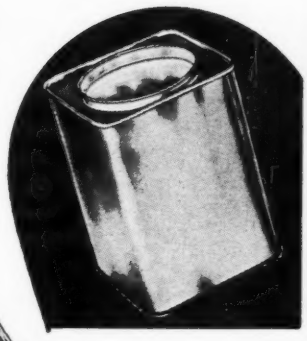
Mr Marshall, a Solvay employee since November 1951, has been with the Boston office since that time.

Mr McNeill first came to work for Solvay in 1943. In 1953 he was appointed a salesman and assigned to the Philadelphia Branch. In his new post he will be located at Solvay's New York sales administrative office.

Mr Reed joined Solvay's Sales force at Boston in 1950. In 1958 he became assistant to the manager of the Organic Chemicals Section. He now returns to Boston where he will assume increased responsibility in direct sales.

CANS

ALL SIZES for DYESTUFFS COLORS and CHEMICALS



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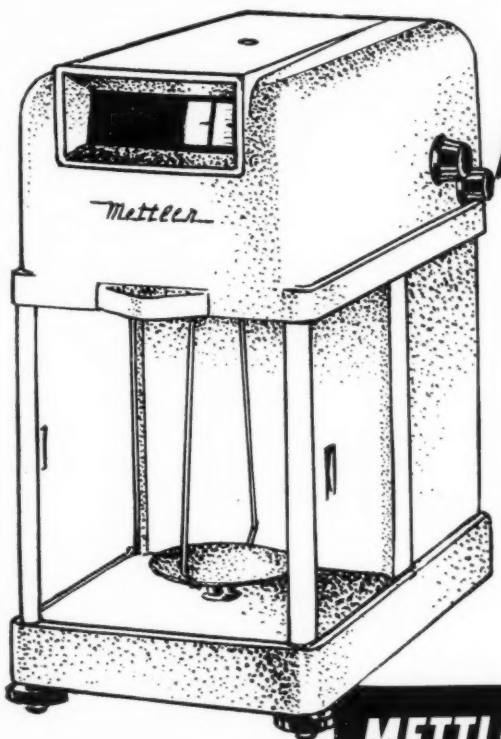

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Faust

Harold P Faust, veteran laboratory manager of Ciba's Charlotte, NC, office, celebrated 40 years with the Ciba organization last month.

Born in Brooklyn, NY, where he spent his early years and finished high school, Mr Faust later took night courses in industrial chemistry and business practice at Columbia University. After spending a year and a half with a predecessor company, Mr Faust joined Ciba as a laboratory technician in February, 1921 when the Company's New York offices were established. The year 1926 saw him transferred to Ciba's new office at Greensboro, NC.

In 1936, when Ciba's offices in Greensboro, NC, and Greenville, SC, were merged under Samuel Hayes in new quarters in Charlotte, Mr Faust was transferred to the Sales Division and began calling on textile plants in Virginia and North Carolina. In 1938 he transferred his sales activities to the Columbus, Ga, area. Four years later he returned to Charlotte to take up his present position as manager of the technical service laboratory for the Southern Region.

Kenneth Hewison-Smith, vice president in charge of marketing of Fiber Industries, Inc, Charlotte, NC, was elected a member of the company's board of directors at a recent board meeting. At the same meeting, **Peter T Barrett** was named vice president and technical director of Fiber Industries, a company owned jointly by Celanese Corp of America and Imperial Chemical Industries Ltd, of Great Britain.

Fiber Industries is constructing a 40 million-pound-per-year polyester fiber plant at Shelby, NC, which is expected to go into production during the second quarter of 1960.

Mr Hewison-Smith was joint commercial manager of the I C I Fibres Division, with headquarters in London, prior to becoming Fiber Industries' marketing vice president in October, 1958.

Dr Barrett was formerly assistant research manager of the I C I Fibres Division, with headquarters at Harrogate, England.

Weldon

Stanton

Williams

Platner

Hunter

Hussey

A major realignment in the field sales oragnization of The Goodyear Tire & Rubber Company's Chemical Division has been announced, following closely the creation of two new sales departments within the Division.

Joseph E Weldon has been appointed sales representative in the Boston district. Mr Weldon, who has had extensive experience in the compounding and coatings industries, will be concerned primarily with the sales of latices and resins.

L E Stanton, former district manager at Houston, has been transferred to Detroit as district manager, replacing **L P Thies**, who recently was named manager of the new Polyester Products department.

R W Williams, former senior sales representative on the West Coast, has been appointed West Coast district manager. In this position, he will headquarter at Portland and also maintain offices in Los Angeles and San Francisco.

J Platner, former senior sales engineer in the Rubber and Rubber Chemicals departments, has been appointed district manager at Houston, replacing Mr Stanton.

J D Hunter, former senior sales representative in the division's Chicago office, has been transferred to the St Louis office as district manager. He replaces **W E Kelly**, who recently was named manager of the division's new Adhesives department.

* * *

Twenty-five years of continuous service with The Goodyear Tire & Rubber Company were celebrated recently by **John M Hussey**, district manager for the Company's Chemical Division at Boston.

During a dinner party attended by friends and business associates in Boston, Hussey received a 25-year pin from **H R Thies**, general manager of the division. A number of other gifts appropriate to the occasion also were presented to Mr and Mrs Hussey.

Hussey started with Goodyear in 1934. In 1945, he became technical salesman for Goodyear's Plastics and Coatings department. The following year he became special representative in New York, and later Boston, selling chemicals. Hussey was appointed district manager at Boston when the Chemical Division was officially organized in 1948. In 1953, he was awarded the Litchfield Medal as the top Goodyear domestic salesman.

Cocoros

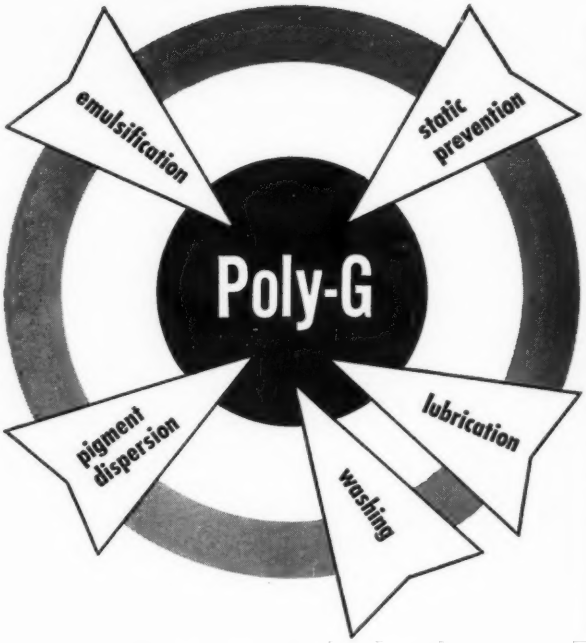
George Cocoros, former head of product development for Deering Milliken Research Corp, now heads a separate division for Belfast fabrics.

Cotton goods are converted into Belfast fabrics at the finishing stage. Milliken Research has licensed eight companies to produce the so-called self-ironing fabrics, including Cranston Print Works Co; J P Stevens & Co, Inc; Sayles Finishing Plants, Inc; Cone Mills Corp; Cannon Mills, Inc; Bradford Dyeing Assn (USA); Southern Bleachery and Print Works, Inc; and Fothergill & Harvey Ltd, Littleborough, England.

Several dozen converters have been licensed under the Belfast fabrics program and more than 100 cutters are licensed.

While in product development, Mr Cocoros' responsibilities included the quality control program for Belfast fabrics, as well as technical assistance for licensed participants.

Mr Cocoros formerly was associated with Dan River Mills and Excelsior Mills, Inc, having been plant manager of Excelsior's plant at Johnston, SC.



MATHIESON

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Poly-G polyethylene glycols are produced by Olin Mathieson in molecular weights ranging from 200 to 1500. Poly-G 200, 300, 400, and 600 are clear, odorless, viscous liquids soluble in water, acetone, ethanol, ethyl acetate and toluene. Poly-G 1000 and 1500 are white waxy solids having slightly less water solubility than lower members of the series. Poly-G B1530, a white waxy solid, is a selected blend of Poly-G 1500 and Poly-G 300.

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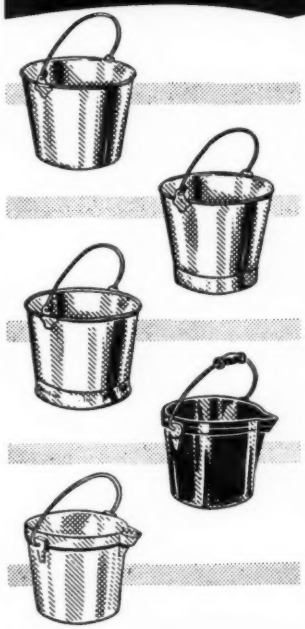

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TYPE 316 STAINLESS. For extra corrosion resistance with acids and other corrosive chemicals, Type 316 Stainless pails should be used. Plain and chime bottom. Sizes: 13, 16, and 20 quart.

MONEL. These welded Monel pails remain virtually unaffected by the corrosive attack of brine, most types of volatile fluids, acids and alkalies. Sizes: 12, 14, 16, and 20 quart.

HARD RUBBER. Made with a virgin rubber base, this pail will not crack or chip; it resists abrasion, heat distortion, and the corrosive action of a wide variety of chemicals. Capacity, 3 gallons, graduated 1 to 12 quarts.

POLYETHYLENE. Unbreakable and quite chemically inert, this pail is molded in one piece, with bale handle and broad pour spout for easy pouring. Extra heavy construction. 2½ gallon capacity only.

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Koch

George Koch has been named director of commercial development for Nuodex Products Co, a division of Heyden Newport Chemical Corp.

Mr Koch has engaged in research, technical service and commercial development activities for the past ten years. He was previously associated with Chas Pfizer and Co, Inc in research and development activities.

Two staff appointments in Diamond Alkali Company's General Sales and Market Planning Department, Cleveland, have been announced.

John R McCullough, field salesman headquartered at the Company's Pittsburgh sales office, has been named special staff assistant to the director of sales.

David F Hahlen, a junior engineer in Diamond's Soda Products Development group, has become an analyst in the market planning group of the General Sales Department, a newly-created position.

McCullough is a 20-year Diamond veteran who started with the Company in Pittsburgh. Hahlen came to the Diamond organization in 1956.

James G Moore, editor of *The Technician,* student newspaper at North Carolina State College, has been awarded the $500 American Viscose Corporation Scholarship in the college's School of Textiles for the 1959-60 academic year. Mr Moore is a senior.

Winner of the $500 scholarship established at the college by the Herman Cone Family Foundation, Inc is **Elizabeth A Satterwhite,** a sophomore at the School of Textiles.

Henry K Brannon, a senior, is the winner of the $400 Underwear Institute of America Scholarship.

R J Stankus has been appointed to the research laboratory staff of Polyvinyl Chemicals, Inc. Mr Stankus, who has been assigned to the application development research group, was formerly a member of the laboratory staff of Rohm & Haas.

Brockman

Healey

Century Chemical Corp, New York pigment and dyestuffs manufacturer, has announced the appointment of **Rear Admiral William Brockman,** USN (Ret) as a director and vice president. Admiral Brockman has resigned as president of the Bellanca Corp, as well as president and chairman of the board of the General Development Corp and will actively participate in Century's management and over-all expansion plans.

Century also has announced the appointment of **William M Healey** as controller and **Robert Heflin** as assistant controller. Both men were formerly with the public accounting firm of Arthur Andersen & Co.

Driscoll

After 38 years selling dyes and chemicals on the West Coast, **David F Driscoll,** manager of the Sandoz, Inc, Los Angeles office, will retire this October 1. He terminates an active association with the dyestuff industry which began in 1917—after graduation from the Philadelphia Textile Institute—when he joined Grasselli Chemicals Company as chief of the Grasselli plant's Standardizing and Application Laboratories.

From Grasselli, Mr Driscoll went to the Ciba Company as a salesman in the Chicago territory, and in 1921 he went to the Pacific Coast to be Pacific Coast manager for Dyes Distributing Corporation. Four years later, he joined Sandoz Chemical Works, Inc, in the same capacity. His trade contacts since then have ranged from textile mills in Washington and Oregon to the anodized aluminum dyeing shops which supply bright colored components to California's aircraft and instrument industries.

Richards

C Byron Richards, director of industrial relations for the Chemical Divisions of Food Machinery and Chemical Corporation, has moved to FMC's Chemical Divisions headquarters in New York. For the past three years, Mr Richards has been located at FMC's largest chemical installation in South Charleston, W Va.

Two new positions are included in four changes in the School of Textiles faculty at Clemson College.

Martin Chanin has gone to Clemson as professor of textile chemistry from a position as research chemist in Memphis, Tennessee. Formerly a member of the Memphis State Univ faculty, he replaces **J H Langston,** who resigned to accept a position at Howard (Ala) University.

Maurice Goldemberg fills a new position as associate textile chemist in the department of textile chemistry. He has been director of the dyehouse and laboratory, United Piece Dyeworks, Charleston, SC.

Edward S Olson, a 1938 Clemson graduate working on his master's degree in textile chemistry, has joined the department of textile research as a research assistant. He was formerly with the wool research and development division of Deering Milliken.

Henry H Perkins, a candidate for the master's degree in textile chemistry at Clemson, has become a graduate assistant in that department.

All four appointments are for the 1959-60 academic year.

J B Goldberg, consultant to the textile and allied industries, accompanied by Mrs Goldberg, is leaving for a month's visit to the Far East on September 24th. During his stay in Japan, Mr Goldberg has been invited to address the Japan Chemical Fibers Association in Tokyo on September 28th and in Osaka on October 1st discussing recent textile developments in the United States. His talks will include comments on the Fiber Products Identification Act, the flammability of textiles, activities in the promotion of man-made fibers in this country, wash-wear fabrics and similar topics of general interest.

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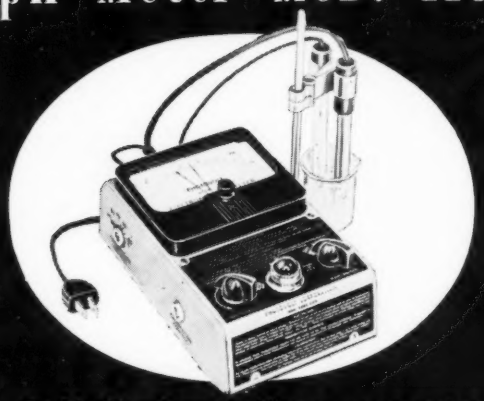

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Hallett

Gregg

Phipps

Imperial Color Chemical & Paper Corp has announced the appointment of **John V Hallett** as director of research for the Pigment Color Division. Mr Hallett had been serving as assistant to the technical director since 1951.

W Paul Moeller, former sales manager of the Plastics Division, Celanese Corporation of America, has joined AviSun Corporation as manager, special projects.

AviSun, an equally owned affiliate of American Viscose Corporation and Sun Oil Co, was formed earlier this year to manufacture and market polypropylene polymer, film and fiber.

Robert A Gregg has been appointed research manager of the textile division, United States Rubber Co.

Dr Gregg, formerly acting assistant head of synthetic rubber research at the rubber company's Research Center in Wayne, NJ, is responsible for long-term research work in fibers, treatments and chemical modification of textiles. He will direct research activities of the 10-plant textile division from the Wayne location.

Textile division development and technical service at Winnsboro, SC, and all plants will continue under the direction of **S H Sherman**, development manager.

Howard Phipps Jr has been elected to the board of directors and the executive committee of Western Petrochemical Corp. Phipps is associated with the Bessemer Securities Corp, an investment holding firm.

The appointment of **Edwin M Williams Jr** as sales representative in the Greensboro, NC area has been announced by Allied Chemical Corporation's National Aniline Division.

Mr Williams joined National Aniline in 1946 as a laboratory assistant in the Charlotte Branch. He was transferred to the Atlanta Branch in 1954.

OBITUARY

W E H BELL

WILLIAM E H BELL died of a heart attack in his office during the afternoon of July 27, 1959. Born in Petersburgh, Pa, Mr Bell was 73 years of age.

He was president of the Klauder-Weldon Giles Machine Co, Philadelphia. His home was in Glenside, Pa.

The Klauder-Weldon Dyeing Machine Company was founded in Amsterdam, N Y, in 1882 by Leonard Weldon of that city, and John H A Klauder of Philadelphia, two inventors unknown to each other whose patents on a dyeing machine arrived almost simultaneosuly at the United States Patent Office. Instead of contesting the patents, which were almost identical, the two formed a partnership.

Mr Bell joined this company in Amsterdam in 1908, moving from there to Yardley, Pa and later to Bethayres. In 1926, H W Butterworth & Sons Co bought the old company, which a few years later Mr Bell bought and merged with the Giles Dyeing Machinery Company.

Mr Bell played an important role in developing the rotary hosiery and skein-dyeing machinery.

He was a member of the Masonic Order, the Northeast Philadelphia Chamber of Commerce, and a past president of the Glenside Fire Company.

C L SCHUTTIG

CHARLES L SCHUTTIG, vice president and sales manager of Arkansas Company, Inc, Newark, NJ, died August 27th after a long illness.

Mr Schuttig joined Arkansas Company twenty-five years ago as a sales representative in the textile field, becoming widely known in the trade and advancing to a key position in the company.

Prior to his position with Arkansas, Mr Schuttig was with John Campbell & Company and A Klipstein Company.

He was active in civic, religious and fraternal organizations.

C W PECK

CARROLL W PECK, 67, treasurer and former president of George Mann & Co, Inc, Providence, RI, New England chemical distributors, died at his home in Rumford, RI, on August 30th.

Mr Peck, a 1913 graduate of Lowell Technological Institute, was a character member of the American Association of Textile Chemists and Colorists. He was also a member of the Chemists' Club (New York), the Chemical Club of New England, and the Wannamoisett Country Club.

E STEIN

EDWIN STEIN, chairman of the board, Stein Hall & Co, Inc, died suddenly on August 31st in Lenox Hill Hospital, New York. He was sixty-four years old.

Mr Stein had been associated with Stein Hall for forty-three years. He was elected president and director of the company in 1944 and chairman of the board in March 1948.

The son of the late Leo Stein, founder of Stein Hall's New York operations, Edwin Stein was an important figure in developing the company's services to the textile, paper and adhesive industries.

Mr Stein was graduated from Yale University in 1916. He was commissioned lieutenant of artillery during World War I and served in France as personnel adjutant in the 10th Engineer Regiment. In 1950, shortly after the start of the Korean War, he was appointed consultant for the adhesives industry to the Plastics Branch of the National Production Authority's Chemical Division.

He was a member of the Yale Club and Chemists Club.

O W CLARK

ORMAND WESLEY CLARK, a textile chemist with American Cyanamid Company's Bound Brook plant for 20 years, died August 24 at his home in White House Station, NJ. He was 61 years old.

A native of Lawrence, Mass, Mr Clark was a graduate of both Massachusetts Institute of Technology and of Columbia University. He became associated with Cyanamid in 1939 and spent most of his career with the technical field service section of the company's dyes department.

Mr Clark was the author of more than 15 papers on dye applications, which were published in leading technical and trade journals. He was a member of the American Chemical Society, the American Association of Textile Chemists and Colorists, the Technology Club of Northern New Jersey and the Society of Dyers and Colourists.

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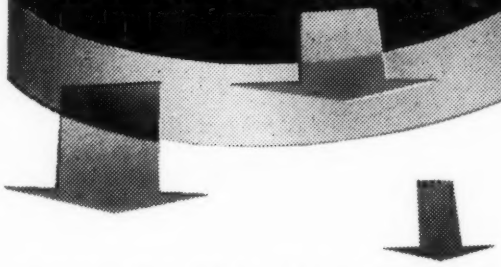

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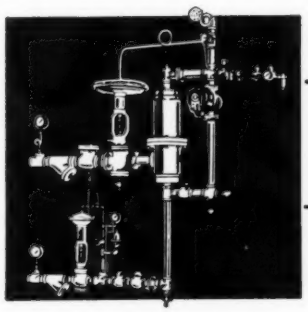

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Abstracts

(See also pages 153-4)

FTC Issues Rules for Enforcement of Textile Products Labeling Law

Anon, *Modern Textiles* **40**, 20, 33, July, 1959

Recently the Federal Trade Commission issued in final form its rules and regulations for enforcement of the new Textile Fiber Products Identification Act which will go into effect March 3, 1960. These rules settled a number of disputes which had been aired in public hearings in Washington. Following are some of the most important rulings:

Rayon is defined as "a manufactured fiber composed of regenerated cellulose, as well as manufactured fibers composed of regenerated cellulose in which substituents have replaced not more than 15% of the hydrogens of the hydroxyl groups" (Rule 7).

In fabrics containing more than one fiber, where the label indicates the amount of each fiber present, deviations up to 3% are permissible (Rule 43).

The term "virgin" or "new" is restricted to textile fiber products composed wholly of "new or virgin fiber which has never been reclaimed from any spun, woven, knitted, felted, bonded or similarly manufactured product" (Rule 35).

Imported textile fiber products must be labeled with the name of the country where such product was "processed or manufactured" (Rule 33). However, when a textile fiber product is made in the U S from imported textile fiber products (eg, a shirt made from an imported fabric), the label need not disclose the country where the fabric originated.

Of special interest to fiber producers who may wish to make application for the establishment of new generic names for fibers is the provision of the rules stating how this may be done. Rule 8 provides that an applicant for a new generic name shall give reasons why the applicant's fiber should not be identified by one of the generic names established by Rule 7.

The overall purpose of the Textile Products Identification Act is to require a statement in labels and advertising of the fiber content of textile products. In essence, the new law requires that labels be affixed to "household textile articles," including wearing apparel, costumes and accessories, draperies, floor coverings, furnishings, beddings, and other textile goods of a type customarily used in the household regardless of where used. Such labels must state the fiber or fibers of which the product is made, designating with equal prominence each natural or manufactured fiber by its generic name in the order of predominance by weight if the weight of such fiber is 5% or more of the total fiber weight of the product.

The law also requires that in advertising textile fiber products the use of a fiber trademark shall require a full disclosure of the fiber content information as required by the Act. Where a trademark is used, the generic name of the fiber must appear "in immediate proximity."

A list of 16 generic names of manufactured fibers, with their definitions as established by Rule 7 in its final form, is included.

For Wash-and-Wear Fabrics, Arnel-Orlon Blends

Elsom, H F and Lacy, R. E, *Modern Textiles* **40**, 28, 30, 33, Mar, 1959

Arnel (Celanese Corp's triacetate fiber) is capable of producing fabrics with exceptional wash-and-wear performance in blends with other fibers (eg, rayon, cotton, Dacron and Orlon). The present article is concerned with Arnel/Orlon blends.

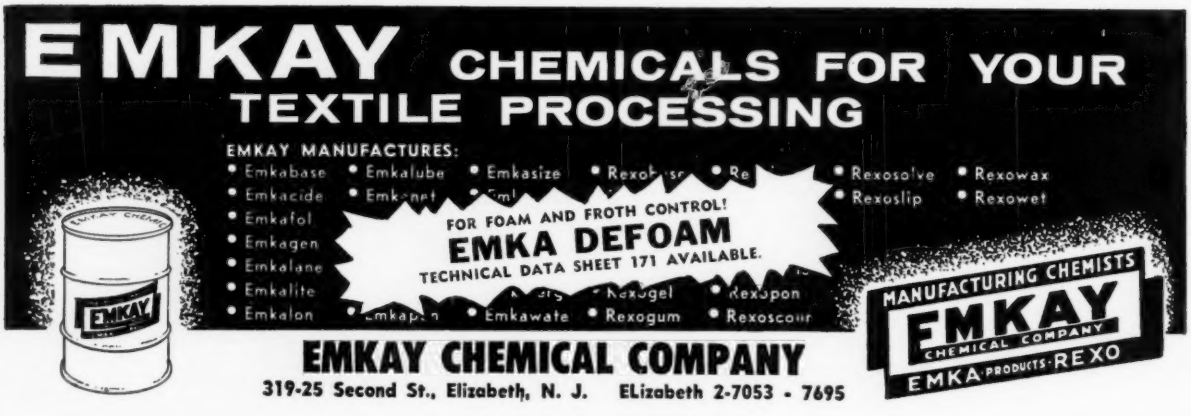
Because the Arnel/hi-bulk Orlon blends will shrink during fabric finishing, it is necessary to weave fabrics in an open condition in order to obtain the desired fabric character. A typical blend of 60% Arnel with 40% hi-bulk Orlon can be expected to contract approximately 27% in width and 20% in length from loom to finished construction. This contraction in wet processing operation is vitally important to achieve the ultimate in fabric loft and hand.

These fabrics, after boiling-off to remove size, have a good white base and do not require bleaching if they are to be dyed. For fabrics which are to be finished white, the materials may be bleached with sodium chlorite and oxalic acid.

Arnel-Orlon blends can be cross-dyed or union-dyed. Selected cationic dyes are applied to Orlon, and disperse dyes applied to Arnel. Either fiber may be reserved by proper selection of dyes. Union dyeing of most shades may be accomplished in a one-bath system, which is described. It is important to add the dyes and chemicals to the dyebath in the proper sequence, and to adjust the pH. Cationic dyes should be used which are stable and will dye in a slightly acid or neutral bath. A list of suitable dyes is included. A gas-fading inhibitor may be added if desired.

After dyeing and extracting, loop drying of these blends at 225-250°F is suggested. Drying temperatures should not be in excess of 300°F.

A heat treatment (not over 400°F) is said to increase the washfastness of dyes on Arnel by as much as 20°F.



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